IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

Malikie Innovations Ltd. and Key Patent Innovations Ltd.,	§	
Plaintiffs,	§	
v.	§	**CIVIL ACTION NO.**
Core Scientific, Inc.	§	**JURY TRIAL DEMANDED**
Defendant.	§	

COMPLAINT FOR PATENT INFRINGEMENT AND JURY DEMAND

Plaintiffs Malikie Innovations Ltd. ("Malikie") and Key Patent Innovations Ltd. ("KPI") (collectively, "Plaintiffs"), by and through their undersigned counsel, bring this Complaint for patent infringement and damages against Defendant Core Scientific, Inc. ("Core Scientific" or "Defendant") and, in support, allege the following:

PARTIES

1. Plaintiff Malikie is the successor-in-interest to a substantial patent portfolio created and procured over many years by Blackberry Ltd., formerly known as Research in Motion Ltd., and its predecessor, subsidiary, and affiliated companies (collectively, "Blackberry"). Malikie is an Irish entity duly organized and existing under the laws of Ireland. Malikie has registered offices at: The Glasshouses GH2, 92 Georges Street Lower, Dun Laoghaire, Dublin A96 VR66, Ireland.

2. Plaintiff KPI is the beneficiary of a trust pursuant to which Malikie owns, holds, and asserts the Asserted Patents (set forth below). KPI is an Irish entity duly organized and existing under the laws of Ireland. KPI has registered offices at: The Glasshouses GH2, 92 Georges Street Lower, Dun Laoghaire, Dublin A96 VR66, Ireland.

3. On information and belief, Defendant Core Scientific, Inc. ("Core Scientific") is a Delaware corporation, with a principal place of business at: 838 Walker Road, Suite 21-2105, Dover, DE. On information and belief, Core Scientific maintains operational facilities in Texas, including in this District, and in other states. On information and belief, Core Scientific owns and operates the website located at https://corescientific.com/.[1]

NATURE OF THE ACTION

4. This is a civil action for patent infringement under the patent laws of the United States, 35 U.S.C. § 1 *et seq*.

5. This case centers on ground-breaking innovations in elliptic curve cryptography that were discovered by some of the field's leading technologists at Certicom Corporation and Blackberry Limited (formerly known as Research In Motion, or "RIM"), that years later were recognized and selected by the designers of Bitcoin[2]—far and away the world's most valuable cryptocurrency—to enable Bitcoin's characteristic quality as a "trustless" payment system requiring no third party intermediary. Specifically, the Bitcoin protocol incorporates cryptographic technology developed and patented by Certicom and Blackberry—technology covered by the Asserted Patents. Defendant, in turn, uses this patented technology to operate one of the largest bitcoin mining operations in the world, manage its proceeds, and engage in bitcoin transactions.

6. Malikie is the assignee of and owns all right and title to U.S. Patent Nos. 8,788,827 (the "'827 Patent"); 10,284,370 (the "'370 Patent"); 8,666,062 (the '062 Patent"); 7,372,960 (the "'960 patent"); and 8,532,286 (the "'286 Patent") (collectively, the "Asserted Patents"), which were duly and legally issued by the United States Patent and Trademark Office ("USPTO").

[1] All URLs cited in this Complaint were last visited on April 28, 2025, unless otherwise noted.
[2] As used herein, "Bitcoin" with a capital "B" refers to Bitcoin's protocol, network, and blockchain, whereas "bitcoin" with a lower case "b" refers to the unit of cryptocurrency.

Plaintiffs seek monetary damages for patent infringement claims not discharged by or as a result of Core Scientific's bankruptcy proceedings.

FACTS COMMON TO ALL CLAIMS

Background

The Rise of Bitcoin

7. Earlier this year, the price of a single bitcoin (1 BTC[3]) reached $109,000.[4] While that is an impressive figure in absolute terms, it is even more impressive considering how much the value of bitcoin has increased over the years. When today's leading U.S.-based cryptocurrency exchange was founded in 2012, "a bitcoin was worth $6 and only known by a few nerds on the internet."[5] Just two years prior to that, 1 BTC was worth less than a penny: $0.0041. On May 22, 2010, in what is widely understood to be the first commercial Bitcoin transaction, Laszlo Hanyecz (one of Bitcoin's earliest developers and proponents) paid 10,000 BTC—worth about $41 at the time—for two Papa John's pizzas.[6] And only seven months before that, 1 BTC was worth just $0.00099. In the first ever exchange of bitcoin for U.S. dollars, Marti Malmi (Bitcoin's second developer after Satoshi Nakamoto) sold 5,050 BTC for $5.02 on October 12, 2009.[7] Following the meteoric rise of Bitcoin, had they kept them, Hanyecz's 10,000 BTC would have been worth over $1 billion in January 2025 and Malmi's 5,050 BTC would have been worth over $550 million. No other cryptocurrency has attained such incredible value.

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[3] "BTC" is a common unit used to designate one bitcoin. *See* https://bitcoin.org/en/vocabulary#btc. Bitcoin can be transacted in units smaller than 1 BTC, in units of "satoshi," which is the smallest unit of bitcoin, equivalent to a one hundred millionth of a single bitcoin (0.00000001 BTC). *See* https://en.bitcoin.it/wiki/Satoshi_(unit).

[4] https://www.coinbase.com/price/bitcoin.

[5] https://www.cnbc.com/2021/04/14/coinbase-co-founders-launched-when-a-bitcoin-btc-was-worth-6.html (quoting Fred Ehrsam, co-founder of Coinbase).

[6] https://www.youtube.com/watch?v=tWU3O3X5kKE; https://www.coinbase.com/learn/crypto-glossary/what-is-bitcoin-pizza.

[7] https://bitcoinmagazine.com/markets/bitcoins-first-trade-now-worth-130-million.

8. Bitcoin is regarded as the first "cryptocurrency" and "remains by far the biggest, most influential, and best-known."[8] Other leading cryptocurrencies today include Ethereum, Tether, and Solana, which, although they are perhaps relatively well-known among those familiar with cryptocurrency, are worth orders of magnitude less than Bitcoin.[9] Thousands of cryptocurrencies exist today[10], but, as the Ethereum website acknowledges, "[i]t all started with bitcoin."[11]

9. While Bitcoin is the foundation of today's sprawling cryptocurrency market, the foundation of Bitcoin's trailblazing trustless digital currency model—its digital signature framework—uses cryptographic technology developed and patented by Certicom and Blackberry.[12] Bitcoin's adoption of this technology set a trend that has propagated throughout the cryptocurrency landscape.

Bitcoin's Foundation on Certicom-Developed Cryptography

10. The creation of Bitcoin is attributed to Satoshi Nakamoto ("Satoshi"), the presumed pseudonym used by the author[13] of a white paper titled "Bitcoin: A Peer-to-Peer Electronic Cash System," which was reportedly sent on October 31, 2008 to a small group of recipients on "The Cryptography Mailing List" using a pipermail message service hosted by metzdowd.com.[14] Satoshi's message included a link to the white paper, which was (and still is) hosted at bitcoin.org,

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[8] https://www.coinbase.com/learn/crypto-basics/what-is-cryptocurrency.
[9] *See*, *e.g.*, *id.*; https://coinmarketcap.com/.
[10] For example, the Coinbase exchange lists hundreds of tradable crypto assets among thousands in existence. https://www.coinbase.com/explore.
[11] https://ethereum.org/en/what-is-ethereum/ (answering "What is a cryptocurrency?").
[12] https://bitcoin.org/bitcoin.pdf ("Bitcoin Whitepaper") at 1, 2, 8.
[13] Satoshi Nakamoto might be one or more persons. *See*, *e.g.*, https://www.metzdowd.com/pipermail/cryptography/2008-October/014810.html ("I've been working on a new electronic cash system…."); *id*. ("We propose a solution to the double spending problem….").
[14] *See* Bitcoin Whitepaper; *see also* https://www.wired.com/story/after-10-years-bitcoin-changed-everything-nothing/.

a site "originally registered and owned by Bitcoin's first two developers, Satoshi Nakamoto and Martti Malmi."[15]

11. The first line of Satoshi's initial message to the "cryptography" community articulated the goal of Bitcoin: to provide "a new electronic cash system that's fully peer-to-peer, with no trusted third party."[16] This defining characteristic of Bitcoin is achieved using cryptography.[17] Specifically, "[d]igital signatures provide part of the solution."[18] As Satoshi explained in a February 11, 2009 message to another online community—the "p2p-research" mailing list—"[o]ne of the fundamental building blocks for such a system [as Bitcoin] is digital signatures."[19]

12. A digital signature is a cryptographic tool for verifying the authenticity of digital data (*i.e.*, validating its original source and genuineness) and its integrity (*i.e.*, that it is accurate, complete, and has not been tampered with).[20] In fact, a bitcoin is fundamentally just "a chain of digital signatures" recorded in a public history or "chain" of transactions. *See* Bitcoin Whitepaper at 2 ("We define an electronic coin as a chain of digital signatures. Each owner transfers the coin to the next by digitally signing a hash of the previous transaction and the public key of the next owner and adding these to the end of the coin."), 8 (describing "a peer-to-peer network using proof-of-work to record a public history of transactions").

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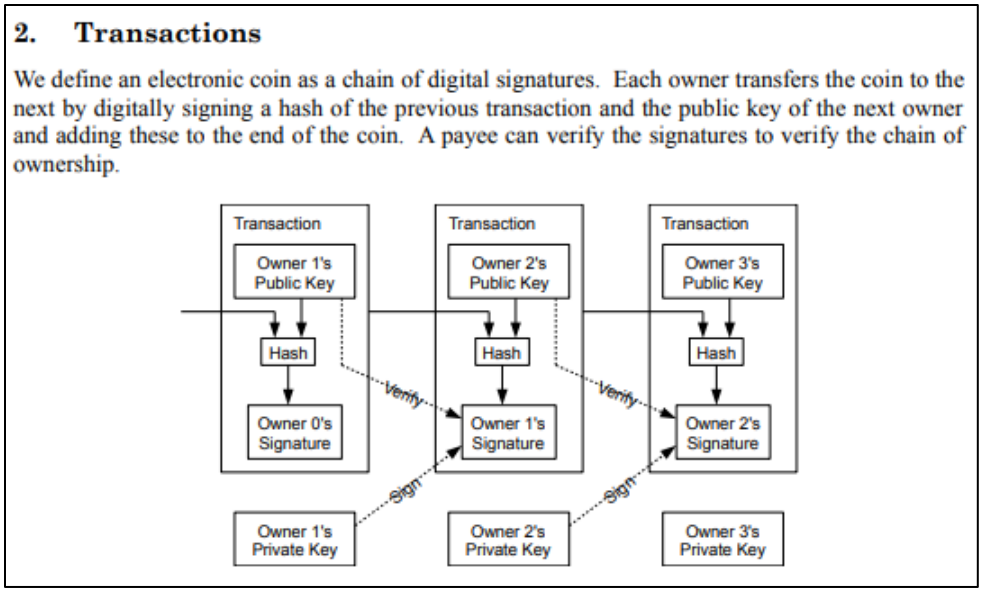
[15] https://bitcoin.org/en/about-us#own; https://www.metzdowd.com/pipermail/cryptography/2008-October/014810.html.
[16] https://www.metzdowd.com/pipermail/cryptography/2008-October/014810.html; *see also* Bitcoin Whitepaper (abstract).
[17] Bitcoin Whitepaper at 1 ("What is needed is an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party.").
[18] https://www.metzdowd.com/pipermail/cryptography/2008-October/014810.html (abstract); Bitcoin Whitepaper (abstract).
[19] https://satoshi.nakamotoinstitute.org/emails/p2p-research/35/.
[20] https://www.cisa.gov/news-events/news/understanding-digital-signatures.



2. Transactions

We define an electronic coin as a chain of digital signatures. Each owner transfers the coin to the next by digitally signing a hash of the previous transaction and the public key of the next owner and adding these to the end of the coin. A payee can verify the signatures to verify the chain of ownership.

Bitcoin Whitepaper at 2

See also https://satoshi.nakamotoinstitute.org/emails/p2p-research/35/ ("A digital coin contains the public key of its owner. To transfer it, the owner signs the coin together with the public key of the next owner. Anyone can check the signatures to verify the chain of ownership"). Specifically, as Satoshi explained to the "cryptography" community shortly after releasing the white paper but before releasing the first version of Bitcoin software, "it's ECC digital signatures."[21]

13. The acronym "ECC" stands for elliptic curve cryptography.[22] ECC "represents a different way to do public-key cryptography—an alternative to the older RSA system—and also offers certain advantages."[23] "ECC devices require less storage, less power, less memory, and less bandwidth than other systems. This allows you to implement cryptography in platforms that are constrained, such as wireless devices, handheld computers, smart cards, and thin-clients. It also provides a big win in situations where efficiency is important."[24] As explained by Certicom

[21] https://satoshi.nakamotoinstitute.org/emails/cryptography/14/; *see also* https://satoshi.nakamotoinstitute.org/emails/cryptography/2/ (explaining that "ECC is nicely compact").
[22] https://en.bitcoin.it/wiki/Elliptic_curve_cryptography.
[23] https://www.certicom.com/content/certicom/en/the-basics-of-ecc.html.
[24] *Id.*

Corporation, "the authority for strong, efficient cryptography," when asymmetric cryptography (such as public-key cryptography) is desired "Elliptic curve cryptography (ECC) is the best choice, because" it "will give you the most security per bit."[25] For example, "ECC offers considerably greater security for a given key size" and enables "faster cryptographic operations, running on smaller chips or more compact software" resulting in "less heat production and less power consumption."[26]

14. ECC is also secure. In 1997, Certicom introduced the "Elliptic Curve Cryptosystem (ECC) Challenge" as a way "to increase industry understanding and appreciation for the difficulty of the elliptic curve discrete logarithm problem, and to encourage and stimulate further research in the security analysis of elliptic curve cryptosystems."[27] Certicom challenged participants to compute the ECC private key from a list of ECC public keys and associated parameters.[28] The challenge included relatively easier (Level I) challenges, some of which have been solved, and more difficult (Level II) challenges, which Certicom believed to be "computationally infeasible" and still have not been solved.[29]

15. As mentioned above, Bitcoin uses ECC digital signatures. Specifically, Bitcoin uses an elliptic curve digital signature algorithm ("ECDSA") with parameters known as "secp256k1."[30] Secp256k1 is defined in a Standards for Efficient Cryptography (SEC) specification titled "SEC 2: Recommended Elliptic Curve Domain Parameters" (Version 2.0, Jan.

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[25] https://www.certicom.com/content/dam/certicom/images/pdfs/WP-ECCprimer.pdf at 3, 22.
[26] *Id*. at 3.
[27] https://www.certicom.com/content/certicom/en/the-certicom-ecc-challenge.html.
[28] *Id*.
[29] *Id*.
[30] https://en.bitcoin.it/wiki/Elliptic_Curve_Digital_Signature_Algorithm; https://en.bitcoin.it/wiki/Secp256k1.

2010), which is a publication of the Standards for Efficient Cryptography Group (SECG).[31] The SEC 2 paper (Version 2.0) was generated by Certicom Research and identifies Dan Brown of Certicom as the main contact.[32] Dan Brown is a co-inventor of several of the Asserted Patents in this case. *See infra*.

16. Certicom—which was "[f]ounded in 1985, the same year Elliptic Curve Cryptography (ECC) was invented"—has a long been regarded as the leader in ECC technology.[33] Indeed, Scott Vanstone, who co-founded Certicom in 1985 with Gord Agnew and Ron Mullin, was an internationally recognized top ECC researcher and the recipient of prestigious awards and recognitions for his monumental and profound contributions in the field of ECC.[34] Vanstone authored numerous papers and was awarded hundreds of patents related to ECC.[35] To help drive ECC's commercial adoption, Certicom (with Vanstone) founded the SECG in 1998.[36] The purpose of the SECG is "to develop commercial standards that facilitate the adoption of efficient cryptography and interoperability across a wide range of computing platforms."[37] "SECG members include leading technology companies and key industry players in the information security industry," including its founding member, Certicom.[38] Certicom's development of a standards body to promote ECC was welcomed by many in the cryptography industry. As the

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[31] https://www.secg.org/sec2-v2.pdf at 9.
[32] *Id*. (cover page).
[33] https://www.certicom.com/content/certicom/en/about.html.
[34] *See*, *e.g.*, https://www.certicom.com/content/certicom/en/about/news/release/2004/certicom-founder-scott-vanstone-wins-prestigious-research-award.html; https://www.certicom.com/content/certicom/en/about/news/release/2009/certicom-founder-wins-premiers-catalyst-award-for-lifetime-achie.html; https://uwaterloo.ca/news/profound-impact-researcher.
[35] *See id*.
[36] https://www.cnet.com/tech/tech-industry/certicom-creates-standards-body/.
[37] https://www.secg.org/.
[38] *Id*.; *see also* https://www.certicom.com/content/certicom/en/about/news/release/2005/standards-for-efficient-cryptography-group--secg--announce-new-i.html (identifying Certicom as "a founding member of SECG").

chief scientist of one security firm put it in 1998, "It's good news for the industry as a whole to move ECC forward because it is a promising technology."[39] In 2004, a professor at Texas Tech University (winner of the Certicom Elliptic Curve Cryptography (ECC)2-109 Challenge) said, "I think public-key cryptography based on ECC is what we should and will be moving toward."[40] Walt Davis, former senior vice-president at Motorola, told Vanstone that he believed "ECC was the only technology that would work in their constrained environments."[41]

17. Demonstrating its position as the leader in developing and promoting ECC technology, Certicom hosted the annual ECC Conference beginning in 2004, which "was designed to interest both a technical audience and business managers."[42] Vanstone recalled that the 2004 conference "was well-attended by cryptography experts, industry leaders and members of the developer community."[43] The conference also "held significant historical value," with "luminaries such as Dr. Ralph Merkle, Dr. Neal Koblitz, Dr. Victor Miller and Dr. Walt Davis" in attendance.[44] Those luminaries were the pioneers of public key cryptography and ECC: Miller and Koblitz "independently invented elliptic curve cryptography"; Merkle was one of the inventors of public key cryptography; and Davis was a senior vice-president at Motorola who was an early advocate for ECC and recipient of the first ECC Visionary Award.[45] As a testament to Certicom's status as the unrivaled leader and authority in ECC research and development, industry members recognized that "[t]he one thing holding up elliptic curve cryptography is standards," and that "Certicom is

[39] https://www.cnet.com/tech/tech-industry/certicom-creates-standards-body/.
[40] https://www.metzdowd.com/pipermail/cryptography/2004-April/006798.html.
[41] https://www.certicom.com/content/certicom/en/code-and-cipher/article/529-reflections-the-year-that-was-.html.
[42] *Id*.
[43] *Id*.
[44] *Id*.
[45] *Id*.

the only firm that could drive a standards effort, since it is the most commercial promoter of elliptic curve crypto."[46] Indeed, Certicom has been described as the "authority," "leader," and "expert" in the field of ECC.[47]

18. Resulting from its pioneering discoveries in ECC, Certicom is well known to have been the holder of many valuable patents covering certain implementations of ECC. For example, Bruce Schneier[48], an internationally renowned security technologist (known as the "security guru") and Adjunct Lecturer in Public Policy at the Harvard Kennedy School, once said that "Certicom certainly can claim ownership of ECC," noting that "[t]he algorithm was developed and patented by the company's founders, and the patents are well written and strong."[49] Certicom claimed to have had "the world's largest intellectual property portfolio for these types of [ECC] patents."[50] After acquiring Certicom, BlackBerry grew that portfolio to over 500 ECC patents.[51]

19. Satoshi chose Certicom's secp256k1 curve for Bitcoin's digital signature algorithm.[52] According to the Bitcoin wiki site, "secp256k1 was almost never used before Bitcoin became popular."[53] As one commentator said, "If it wasn't for Satoshi Nakamoto, you probably would never have heard of the secp256k1 Elliptic Curve Cryptography (ECC) method."[54] Even

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[46] https://www.cnet.com/tech/tech-industry/certicom-creates-standards-body/.
[47] *See*, *e.g.*, https://www.metzdowd.com/pipermail/cryptography/2004-April/006798.html; https://news.profoundimpact.com/tag/dr-scott-vanstone/; https://cpl.thalesgroup.com/partners/rim-certicom.
[48] *See* https://www.hks.harvard.edu/faculty/bruce-schneier.
[49] https://betanews.com/2007/05/30/certicom-patent-suit-against-sony-threatens-to-unravel-aacs/.
[50] https://www.certicom.com/content/certicom/en/about/news/release/2007/certicom-announces-executive-changes.html.
[51] https://blackberry.certicom.com/en.
[52] *See*, *e.g.*, https://medium.com/asecuritysite-when-bob-met-alice/the-bluffers-guide-to-secp256k1-when-satoshi-said-goodbye-to-pki-bad327c4f079; https://news.ycombinator.com/item?id=28813291.
[53] https://en.bitcoin.it/wiki/Secp256k1.
[54] https://medium.com/asecuritysite-when-bob-met-alice/the-bluffers-guide-to-secp256k1-when-satoshi-said-goodbye-to-pki-bad327c4f079.

Dan Brown was surprised to learn that Bitcoin uses secp256k1 instead of other, more commonly used parameters.[55] Some suggest that Satoshi, having not received a recommendation for a specific curve, just "picked one."[56] Others suggest that Satoshi relied on expert cryptographers in selecting secp256k1.[57]

20. Whatever the reason, Satoshi's choice of secp256k1 has proven to be well-liked by the Bitcoin community and the broader cryptocurrency community. The Bitcoin wiki site reports that after Bitcoin's adoption of secp256k1, the curve "is now gaining in popularity due to its several nice properties."[58] Gregory Maxwell, a former Bitcoin developer, said in a public forum in October 2021 that Satoshi's choice of secp256k1 "was a good choice at the time, esp[ecially] now after the expiration of the GLV patent."[59] "The GLV patent" refers to another groundbreaking innovation by Certicom's in-house experts in elliptic curve cryptography, famously known as "GLV Endomorphism,"[60] which the Bitcoin community had been stalking for a decade or more after Hal Finney, foundational Bitcoin developer (and receiver of the first ever Bitcoin transaction), discovered in early 2011 that it can be used to speed up signature verifications by 25%.[61]

21. Finney, a well-known and highly respected cryptographer, posted on February 8, 2011 that he figured out a way to speed up ECDSA signature verification for the secp256k1 curve

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[55] https://bitcoinmagazine.com/technical/satoshis-genius-unexpected-ways-in-which-bitcoin-dodged-some-cryptographic-bullet-1382996984 (quoting Brown as saying "I did not know that BitCoin is using secp256k1. Indeed, I am surprised to see anybody use secp256k1 instead of secp256r1.").
[56] https://learnmeabitcoin.com/technical/cryptography/elliptic-curve/ (quoting email between Satoshi and Mike Hearn, a "Bitcoin developer" who published his emails with Satoshi).
[57] https://cointelegraph.com/news/satoshi-nakamoto-had-outside-cryptography-help-says-early-bitcoin-dev (citing Laszlo Hanyecz's account of his conversations with Satoshi).
[58] https://en.bitcoin.it/wiki/Secp256k1.
[59] https://news.ycombinator.com/item?id=28813291.
[60] The Asserted Patents' inventions are independent from and not described in the GLV patent.
[61] https://btctimes.com/hal-finneys-proposal-for-optimizing-bitcoin-to-be-enabled-in-bitcoin-core/.

used by Bitcoin, based on techniques described in "Guide to Elliptic Curve Cryptography" by Hankerson, Menezes and Vanstone.[62] The "Vanstone" of the book's authoring trio is Scott Vanstone, co-founder of Certicom and co-inventor of several of the Asserted Patents in this case. The technique that Finney's post referred to is famously known among the Bitcoin community and elsewhere as "GLV Endomorphism" or the "GLV method," where "GLV" refers to the trio of Certicom innovators that came up with it: Robert Gallant, Robert Lambert, and Scott Vanstone.[63] All three were Certicom technologists and are co-inventors of several of the Asserted Patents in this case. It is widely reported that Finney's proposed inclusion of GLV Endomorphism in the Bitcoin protocol, though it was eventually included in the Bitcoin Core software library named libscep256k1, was not officially implemented at the time because of concerns that it would infringe "the GLV patent," *i.e.*, U.S. Patent No. 7,110,538, which names Gallant, Lambert, and Vanstone as the inventors.[64] On the day the GLV patent expired, and over the days that followed, the Bitcoin community celebrated the anticipated inclusion of GLV Endomorphism in future Bitcoin Core releases.[65] In fact, on the day the GLV patent expired, the Bitcoin Core community began the process of deleting the "slower non-endomorphism code" and replacing it with the faster "GLV optimization," including by deleting the code that previously made GLV endomorphism optional, thereby enabling GLV Endomorphism by default.[66] Others in the Bitcoin community later confirmed Finney's observations that GLV Endomorphism results in significantly faster signature

[62] *Id.*; *see also* https://cointelegraph.com/news/one-of-hal-finney-s-lost-contributions-to-bitcoin-core-to-be-resurrected.
[63] *See id.*
[64] *See id.*
[65] *See id.*
[66] https://github.com/bitcoin-core/secp256k1/pull/826 ("As the patent on the GLV optimization has expired, there is no need to keep the slower non-endomorphism code around anymore.").

verifications (reportedly by 28%).[67] Following Bitcoin's lead, others in the crypto community followed suit in adopting GLV Endomorphism optimizations.[68]

22. While some people like Finney, Malmi, and Hearn are known as early Bitcoin developers, Satoshi Nakamoto is credited with creating the first Bitcoin client, *i.e.*, the first software implementing the Bitcoin protocol.[69] Satoshi announced the release of the first version of Bitcoin software to the "cryptography" community on January 8, 2009.[70] Satoshi's original Bitcoin software is the foundation of today's *de facto* authoritative reference implementation of the Bitcoin protocol, known as "Bitcoin Core."[71] Bitcoin Core continues to implement ECC digital signatures using ECDSA with secp256k1.[72]

23. The public history of Bitcoin's development discussed above shows the impact that Certicom's innovations had on the shaping of Bitcoin and is a testament to the bona fides of Certicom's innovators as significant contributors to the advancement of important and valuable ECC technology.

Blackberry Acquired Certicom Following Their Years-Long Alliance

24. Blackberry was an early adopter of Certicom's ECC technology. In July 2000, in recognition of "Certicom's high performance, efficient ECC," Blackberry and Certicom entered into "an alliance which will enable RIM to utilize Certicom's elliptic curve cryptography (ECC)

[67] https://btctimes.com/bitcoin-upgrade-glv-enomorphism-tests-show-faster-verification/.
[68] *See* https://github.com/RustCrypto/elliptic-curves/issues/211 ("bitcoin-core/secp256k1 is now switching to the endomorphism implementation by default: bitcoin-core/secp256k1#826 I think it would make sense for us to do the same.").
[69] https://en.bitcoin.it/wiki/Satoshi_Nakamoto.
[70] https://satoshi.nakamotoinstitute.org/emails/cryptography/16/.
[71] https://en.bitcoin.it/wiki/Bitcoin_Core (Bitcoin Core is "based on the original reference code by Satoshi Nakamoto"); https://bitcoincore.org/en/about/ ("[Bitcoin Core] is a direct descendant of the original Bitcoin software client released by Satoshi Nakamoto after he published the famous Bitcoin whitepaper.").
[72] https://en.bitcoin.it/wiki/Elliptic_Curve_Digital_Signature_Algorithm; https://en.bitcoin.it/wiki/Secp256k1

technology throughout its wireless product offerings."[73] Blackberry recognized that "Certicom's Elliptic Curve Cryptography (ECC) technology enables strong, high performance security for many pieces of the computing infrastructure," and that "Certicom's patented implementation of ECC technology provides a more efficient alternative to conventional public key cryptographic algorithms … allowing for faster processing speed, reduced bandwidth usage and decreased battery requirements."[74] Accordingly, BlackBerry entered into an "agreement with Certicom, a leader in ECC wireless security technology, [to] enable [BlackBerry] to provide the market with the secure mobile devices they require for m-commerce transactions."[75]

25. In 2009, BlackBerry acquired Certicom, giving rise to BlackBerry Certicom, "a leader in applied cryptography and key management."[76] Certicom's industry-leading research and development continued under BlackBerry Certicom; together BlackBerry and Certicom continued innovating and improving ECC technology. As a result of its rich history in ECC technology development, "BlackBerry Certicom has industry leading expertise in Elliptic Curve Cryptography and has established the world's largest ECC-based patent portfolio."[77] Plaintiff Malikie now owns part of that portfolio, including the Asserted Patents.

Cryptocurrency Basics

26. Bitcoin paved the way for the thousands of cryptocurrencies that exist today. The term "cryptocurrency," or "crypto" for short, refers to a category of "digital money" that, like the fundamental purpose of Bitcoin, "makes it possible to transfer value online without the need for a

[73] https://www.certicom.com/content/certicom/en/about/news/release/2000/research-in-motion-and-certicom-to-enable-trusted-mobile-commerc.html.
[74] *Id*.
[75] *Id*.
[76] https://www.certicom.com/content/certicom/en/about.html.
[77] *Id.*; *see* https://blackberry.certicom.com/en.

middleman like a bank or payment processor."[78] Most cryptocurrencies, including Bitcoin, are decentralized (not managed or controlled by a government or other central authority), not backed by anything of independent value (such as gold), and not guaranteed by anyone (such as a government or bank). Instead, cryptocurrencies are managed by "peer-to-peer networks of computers running free, open-source software."[79] Specifically, cryptocurrency transactions are vetted and recorded using a technology called "blockchain," which is a decentralized database system that stores data in a distributed network of computers. This is in some ways analogous to the ledger of accounts and transactions maintained by a traditional financial intermediary (such as a bank or credit card company). However, unlike with a traditional intermediary where the security of transactions and accounts is vested solely in the intermediary (which requires its customers to trust the intermediary with their money), the security of blockchain transactions is effected by the use of cryptography and "consensus" mechanisms to ensure that a majority of the computers on the network agree that a transaction is valid before it is recorded (*i.e.*, deemed to have occurred).[80]

27. As the name suggests, cryptocurrencies fundamentally rely on concepts from cryptography and computer science to enable the creation of such decentralized, internet-based monetary systems that are secure. Indeed, as stated on the Ethereum website, the world's second most popular cryptocurrency, "[t]he reason assets such as bitcoin and ether are called 'cryptocurrencies' is that the security of your data and assets is guaranteed by cryptography, not by trusting an institution or corporation to act honestly."[81] Cryptocurrencies rely on cryptography

[78] https://www.coinbase.com/learn/crypto-basics/what-is-cryptocurrency.
[79] *Id*.
[80] *Id*.
[81] https://ethereum.org/en/what-is-ethereum/ (answering "What is a cryptocurrency?"); *see also* https://www.coinbase.com/learn/crypto-basics/what-is-cryptography ("Cryptocurrencies are entirely based on cryptographic ideas.").

(hence the name *crypto*currency) to protect participants' assets from theft and to protect the cryptocurrency system from dishonest or unauthorized manipulation that results in dilution of the currency (*e.g.*, double spending).[82] More fundamentally, cryptography is what enables cryptocurrencies like Bitcoin to be "trustless," *i.e.*, what allows cryptocurrency to be transacted securely (even between strangers) without the need for a trusted intermediary to verify and process payments.[83]

Transactions

28. The role of cryptography as a fundamentally enabling technology in cryptocurrencies like Bitcoin is evident in how cryptocurrency transactions are processed, *i.e.*, initiated, validated, and recorded in the blockchain. Unlike with typical currencies, where transactions transfer an amount of currency from one account to another that is redeemable in physical notes and coins, "cryptocurrency transactions are simply data entries recorded on an unchangeable, distributed ledger, referred to as a blockchain."[84] That is, with cryptocurrencies, "no cryptocurrency is actually exchanged between people. Instead, ownership data associated with both parties' crypto wallets is updated on the blockchain each time a transaction is processed."[85]

29. A cryptocurrency transaction—transferring crypto from the sender's digital wallet to the receiver's digital wallet—involves several steps. Using wallet software, a transaction (essentially, a bundle of data) is created that identifies the sender's address (using a public key), the recipient's address (also using a public key), and the amount of cryptocurrency to be sent.[86] The transaction requestor then creates a digital signature for the transaction with its private key

[82] *See* https://www.coinbase.com/learn/crypto-basics/what-is-cryptography.
[83] *See id.*
[84] https://www.kraken.com/learn/how-do-cryptocurrency-transactions-work.
[85] *Id.*
[86] *Id.*

and public key (which are cryptographically linked, as the private key is used to create the public key) and submits the signed transaction to the blockchain network for validation. By signing the transaction with its private key, the requestor proves to the receiving party and to the blockchain network that the transaction is valid. After the receiving party validates the transaction using the sender's public key, the transaction is broadcast to and propagated through the blockchain network, where a majority network nodes must independently verify that the transaction is valid in order for the transaction to be added to the next "block" of the blockchain and thus be permanently and irreversibly recorded.[87]

Wallets

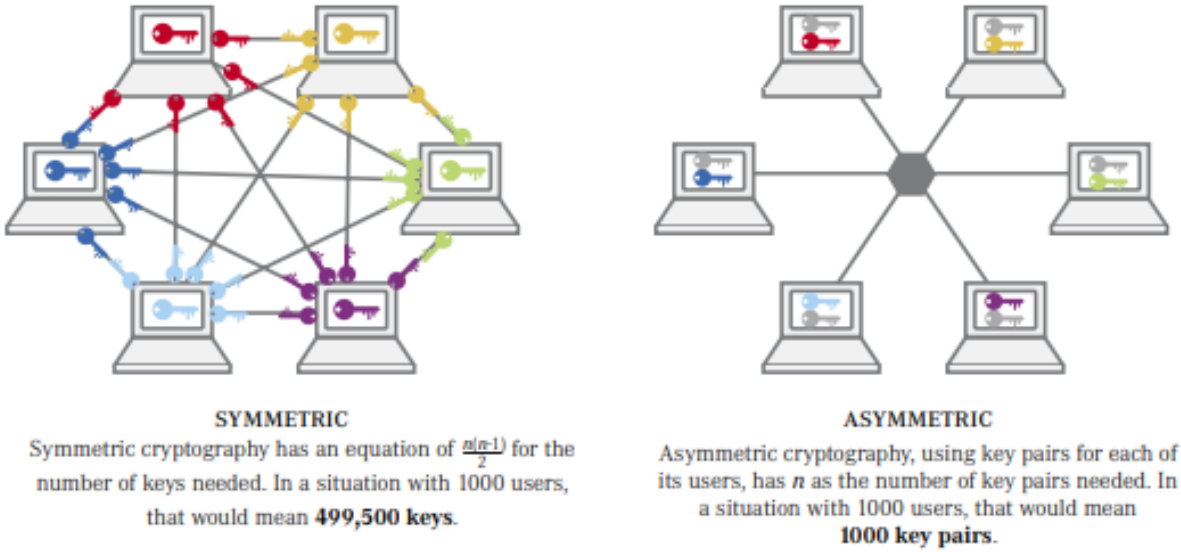
30. A cryptocurrency "wallet" is a tool for interacting with a Blockchain network that allows a user to send and receive cryptocurrencies like Bitcoin.[88] A wallet is typically an application (software) that functions as a wallet for storing the user's private keys and provides interfaces to access and perform transactions with the user's cryptocurrency. Wallets can be custodial (keys are managed by a third party) or non-custodial (keys are managed solely by the user). Forms of hardware wallets also exist (*e.g.*, a USB drive wallet). Crypto wallets don't store the actual cryptocurrency (because the cryptocurrency exists as data in the blockchain) but instead store the public and private keys needed to carry out crypto transactions on the blockchain.[89]

Private Keys and Public Keys

31. Private keys and public keys are related but different pieces of information used in cryptocurrency transactions. They are part of a technique known as asymmetric cryptography, in which two keys are used: (1) a private key (possessed by only the entity wishing to prove its

[87] *See id*.
[88] https://www.investopedia.com/terms/b/bitcoin-wallet.asp.
[89] *See id*.

identity) and (2) a public key (possessed by any number of entities who wishes to verify the identity of the entity possessing the private key).[90] Unlike the alternative approach known as symmetric cryptography—in which a single key is used by both (or all) parties for their respective purposes, thereby preventing the key from being associated with a unique identity—asymmetric cryptography simplifies key exchange by reducing the number of keys needed to secure messages between parties and allows a message signature to be uniquely authenticated (*i.e.*, associated with the unique identity of the sender).[91]



ECC Primer at 5

32. Importantly, while the public key can be used by an entity to verify that another possesses the corresponding private key, "you cannot derive the private key from the public. This is the critical feature of asymmetric cryptographic schemes that makes them so useful." ECC Primer at 4; *see also id.* ("The critical feature of asymmetric cryptography, that makes it useful, is

[90] https://www.certicom.com/content/dam/certicom/images/pdfs/WP-ECCprimer.pdf ("ECC Primer") at 4.
[91] *Id*. at 4–5.

this key pair—and more specifically, a particular feature of the key pair: the fact that one of the keys cannot be obtained from the other."). It is also "the core technology behind digital signatures." *Id.* "A digital signature is a transform performed on a message using the private key, whose integrity may be verified with the public key." *Id.* at 5.

ECC Primer at 5

Elliptic curve cryptography (ECC) is an approach to doing asymmetric cryptography, including for use with digital signatures. *Id.*

33. Private and public keys form a related key-pair—a public key is generated from a private key through a one-way hash function (or "trapdoor function") that is relatively easy to solve in one direction but nearly impossible to solve in the other direction, making it nearly impossible to determine a private key from a public key.[92] *See also* ECC Primer at 6-7 ("In all asymmetric cryptographic schemes, this property—the property that one key is used for encryption, and another for decryption, and the decryption key cannot be found from the encryption key—is derived from the use of mathematical functions whose inverse is extremely difficult to calculate. You may understand an asymmetric cryptographic key pair as a pair of numbers which have some relationship associated with a mathematical function which is relatively easy to compute in one direction, but whose inverse is in practical terms intractable. This feature—the function which is tractable in one direction, but intractable in the other, is common to all asymmetric cryptosystems, including ECC."). This characteristic of asymmetric cryptography

[92] https://www.ledger.com/academy/blockchain/what-are-public-keys-and-private-keys.

allows the sender of cryptocurrency to digitally sign a transaction using their unique and secret private key as proof of ownership, and it allows the recipient and blockchain nodes to verify the digital signature and validate the transaction using the sender's public key. Accordingly, in cryptocurrency transactions, public keys are used to identify the sending and receiving addresses (akin to account numbers in a bank), and private keys are used to sign transactions when sending cryptocurrency to others (which can be verified by the receiver and the blockchain network using the sender's public key).[93]

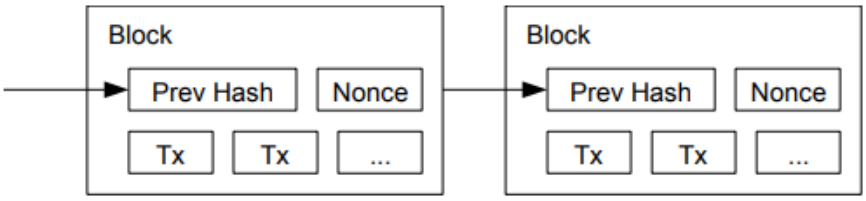
Blockchain

34. Cryptocurrencies like Bitcoin are based on a technology called "blockchain."[94] A blockchain is essentially a distributed database that, in a cryptocurrency network like Bitcoin, contains a list or "ledger" of all historical transactions on the network (*i.e.*, a record of every time anyone sent or received bitcoin). The blockchain of a cryptocurrency like Bitcoin is in some ways akin to the ledger or balance sheet of a bank.

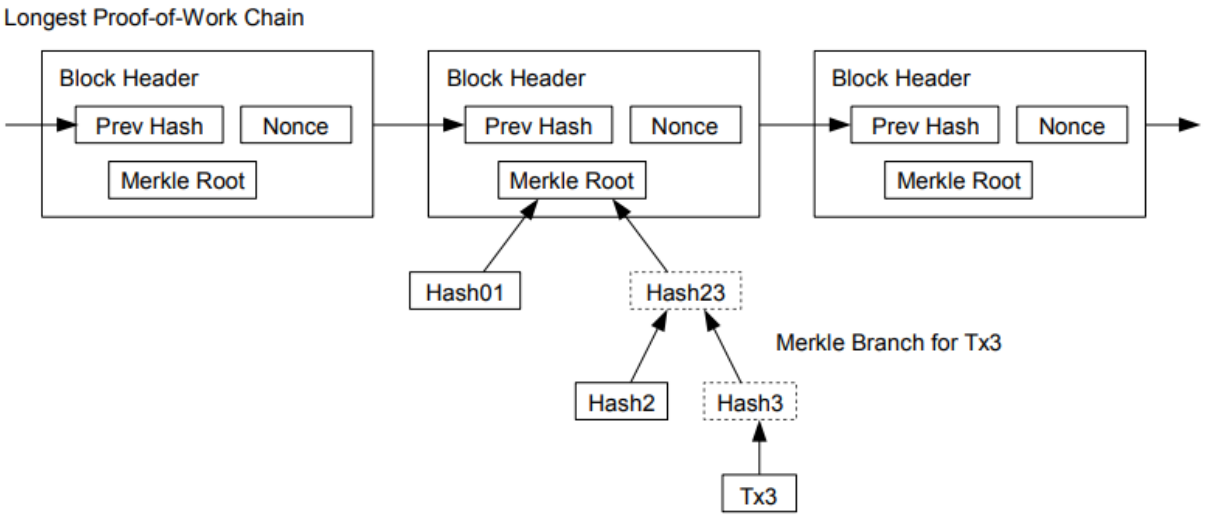
35. A blockchain network includes a number of distributed computers (called "nodes") that store a copy of the blockchain ledger and participate in the verification and recording of each transaction.[95] To become part of the blockchain ledger, a transaction must be transmitted to the network of nodes, which work to confirm the validity of the transaction using cryptographic algorithms. Valid transactions are collected into a fixed-size data file called a "block" (akin to a page of a ledger) that, once filled, is run through a cryptographic hash function (that is, the block is "hashed") to generate a unique hash value for that block. That block's hash value is included within the next block that is created so that when the next block is hashed, its hash value depends

[93] *See id*.
[94] *See* https://www.investopedia.com/terms/b/blockchain.asp.
[95] *See id*.

on the hash of the previous block, thereby creating an irreversible "chain" of blocks (hence the name "blockchain") as the process continues.[96] *See also* Bitcoin Whitepaper at 2–5.



Bitcoin Whitepaper at 3



Bitcoin Whitepaper at 5

36. The Bitcoin blockchain creates a chronological ledger of chained transactions where each new block depends on the information from all previous blocks, thereby making it nearly impossible to undo or manipulate historical transactions without permission.[97] *See also* Bitcoin Whitepaper at 2–3 ("Once the CPU effort has been expended to make it satisfy the proof-of-work, the block cannot be changed without redoing the work. As later blocks are chained after it, the work to change the block would include redoing all the blocks after it."), *id.* ("To modify a past block, an attacker would have to redo the proof-of-work of the block and all blocks after it

[96] *See id.*
[97] *See id.*

and then catch up with and surpass the work of the honest nodes. We will show later that the probability of a slower attacker catching up diminishes exponentially as subsequent blocks are added.").

Bitcoin's Consensus Mechanism: Proof of Work ("Mining")

37. "'Proof of work' and 'proof of stake' are the two major consensus mechanisms cryptocurrencies use to verify new transactions, add them to the blockchain, and create new tokens."[98] "Proof of work, first pioneered by Bitcoin, uses mining to achieve those goals."[99] In a proof of work blockchain, members of the network ("miners") race against each other to be the first to solve a complex cryptographic math problem for determining a hash value associated with a particular block of transactions and present their solution to the network.[100] If the miner's solution is verified by the network, the miner is allowed to create a new block (containing the transactions verified by the miner) and broadcast it to the network. The nodes on the network will then perform audits of the ledger and the new block, and if the auditing nodes agree, the new block is "chained" to the previous block (creating a chronological chain of transactions) and the miner is rewarded with a unit of "coin" (*i.e.*, cryptocurrency), consisting of a mining fee for solving the block, as well as transaction fees for processing the underlying transactions, as compensation for expending their resources (*e.g.*, energy) in the performance of this work. As the block chain grows, mining the next block to receive its reward becomes more computationally expensive (and therefore more resource intensive). Accordingly, the proof-of-work consensus model is more rewarding for those with more resources to deploy.[101]

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[98] https://www.coinbase.com/learn/crypto-basics/what-is-proof-of-work-or-proof-of-stake.
[99] *Id*.
[100] *See id*.; Bitcoin Whitepaper at 3–4; https://www.investopedia.com/terms/b/blockchain.asp.
[101] *See id*.

Core Scientific is One of the Largest Bitcoin Miners in the World

38. Core Scientific is one of the largest Bitcoin miners in the world. It claims to be "a leader in digital asset mining" and "a premier provider and operator of dedicated, purpose-built facilities and software solutions for digital asset mining."[102]

39. Core Scientific describes itself as "a digital mining company" that is "one of the largest in North America, setting the pace for our industry."[103] Core Scientific owns and/or operates multiple mining facilities in the United States.[104]

https://corescientific.com/

[102] https://corescientific.com/.
[103] *Id.*
[104] *Id.*; https://corescientific.com/infrastructure-footprint/.

40. "[Core Scientific's] bitcoin mining operation involves deploying special computers performing trillions of calculations a second to solve complex mathematical puzzles and seek bitcoin as the reward."[105] As of December 31, 2024, Core Scientific's mining facilities utilize approximately 171,000 specialized bitcoin mining computers ("miners") that are collectively capable of performing 20.1 exa-hashes per second (EH/s)—that's 20.1 quintillion (20,100,000,000,000,000,000) cryptographic calculations per second.[106]

41. In 2024, Core Scientific's bitcoin mining operations "had an average hourly operating power demand of approximately 572 MW." Core Scientific 2025 10-K at 7.

42. Core Scientific claims to "operate one of the largest, highest uptime and most geographically distributed fleets in our industry."[107] Core Scientific's self-mining operations "compete globally with other mining operations throughout the world," including "on the basis of our total number of miners, the hash rate we are able to consistently generate, the size and skill of the mining pool through which we participate and the efficiency of our miner and mining operations." Core Scientific 2025 10-K at 9.

43. Core Scientific describes the process of Bitcoin mining that it engages in as follows:

> In a proof-of-work approach such as bitcoin, specialized computers, or "miners," power and secure blockchains by solving complex cryptographic algorithms to validate transactions on specific digital asset networks. In order to add blocks to the blockchain, a miner must map an input data set consisting of the existing blockchain, plus a block of the most recent digital asset transactions and an arbitrary number called a "nonce," to an output data set of a predetermined length using the SHA256 cryptographic hash algorithm. Solving these algorithms is also known as "solving or completing a block." In the Bitcoin network, solving a block results in a reward of bitcoin in a process known as "mining." These rewards of bitcoin currently can be sold profitably when the sale

[105] https://corescientific.com/.
[106] https://investors.corescientific.com/sec-filings/all-sec-filings/content/0001628280-25-008302/0001628280-25-008302.pdf ("Core Scientific 2025 10-K") at 8.
[107] https://corescientific.com/bitcoin-mining/.

> price of bitcoin exceeds the cost of mining, which generally consists of the cost of mining hardware, the cost of the electrical power to operate the machine, and other facility and overhead costs associated with housing, operating and supporting the equipment.
>
> Mining processing power is generally referred to as "hashing power." A "hash" is the computation run by mining hardware in support of the blockchain. A miner's "hash rate" refers to the rate at which it is capable of solving such computations per second. Miners with a higher rated hash rate when operating at maximum efficiency have a higher chance of completing a block in the blockchain and receiving a digital asset reward than those operating at a lower hash rate or with lower efficiency. …
>
> The miners we operate are highly specialized computer servers built to use application-specific integrated circuit ("ASIC") chips that are designed specifically to mine bitcoin. With miners we produce computing power, known as "hash rate," with which we verify transactions on the Bitcoin blockchain. Bitcoin "mining" refers to the process of proposing and verifying transaction updates to the Bitcoin blockchain, which helps keep the Bitcoin network and its blockchain secure. Our bitcoin mining operation is focused on the generation of bitcoin by solving complex cryptographic algorithms to validate transactions on the Bitcoin network blockchain, which is commonly referred to as "mining." Our digital asset self-mining activity competes with myriad mining operations throughout the world to complete new blocks on the blockchain and earn the reward in the form of bitcoin.

Core Scientific 2025 10-K at 6.

44. On December 21, 2022, Core Scientific filed for bankruptcy under Chapter 11 in the United States Bankruptcy Court for the Southern District of Texas. Core Scientific 2025 10-K at 84. Core Scientific emerged from bankruptcy on January 23, 2024. *Id*.

Core Scientific's Use of the Patented Technologies

45. On information and belief, Core Scientific engages and has engaged in bitcoin mining activities since emerging from bankruptcy proceedings on January 23, 2024. *See* Core Scientific 2025 10-K at 7, 10, 24, 46, 84, 93, 126. For example, according to Core Scientific's most recent 10-K filing with the SEC (for the fiscal year ended December 31, 2024), "[c]urrently,

the vast majority of [Core Scientific's] revenue is from mining bitcoin for [its] own account ('self-mining")." *Id*. at 5; *see also id*. at 24 ("We currently generate almost all of our revenue from bitcoin rewards that we earn through self-mining in our facilities."). Core Scientific's "total revenue was $510.7 million … for the year[] ended December 31, 2024."

46. On information and belief, since January 23, 2024, Core Scientific has engaged and continues to engage in bitcoin mining using specialized bitcoin mining computers. Core Scientific 2025 10-K at 6 ("In a proof-of-work approach such as bitcoin, specialized computers, or 'miners,' power and secure blockchains by solving complex cryptographic algorithms to validate transactions on specific digital asset networks. … The miners we operate are highly specialized computer servers built to use application-specific integrated circuit ("ASIC") chips that are designed specifically to mine bitcoin."), 8, 47 ("Our data centers house bitcoin mining computers and will increasingly house graphics processing units ("GPUs")."), 48, 56 ("We operate a digital asset self-mining operation using specialized computers equipped with ASIC chips (known as "miners") to solve complex cryptographic algorithms in support of the bitcoin blockchain (in a process known as "solving a block") in exchange for digital asset rewards (primarily bitcoin)."

47. On information and belief, since January 23, 2024, Core Scientific's mining activities included and continues to include verifying bitcoin transactions, *see id*. at 6 ("With miners we produce computing power, known as 'hash rate,' with which we verify transactions on the Bitcoin blockchain."), 48 ("We own and host specialized computers ("miners") configured for the purpose of validating transactions on multiple digital asset network blockchains (referred to as, "mining"), predominantly the Bitcoin network."), including verifying digital signatures

consistent with the Bitcoin protocol using ECDSA and secp256k1.[108] *See also*, *e.g.*, Core Scientific 2025 10-K at 5 ("Companies and individuals engaged in mining use powerful miners that tally digital asset transactions to operate the blockchain. These miners update stored records each time a transaction is made and ensure the authenticity of information. Each account on the blockchain is identified solely by its unique public key, which renders it effectively anonymous, and is secured with its associated private key, which is kept secret, like a password. The combination of private and public cryptographic keys constitutes a secure digital identity in the form of a digital signature, providing strong control of ownership."), 34 (acknowledging that the bitcoin network is "supported by core developers," that "[a]ny individual can download the applicable network software," and that software downloads and upgrades are "typically posted to development forums such as GitHub.com").

48. On information and belief, since January 23, 2024, Core Scientific participated and continues to participate in bitcoin mining pools. Core Scientific 2025 10-K at 56 ("The Company participates in 'mining pools' organized by 'mining pool operators' in which we share our mining power (known as "hash rate") with the hash rate generated by other miners participating in the pool to earn digital asset rewards. The mining pool operator provides a service that coordinates the computing power of the independent mining enterprises participating in the mining pool. The pool uses software that coordinates the pool members' mining power, identifies new block rewards, records how much hash rate each participant contributes to the pool, and assigns digital asset rewards earned by the pool among its participants in proportion to the hash rate each participant contributed to the pool in connection with solving a block."), 89-90.

[108] *See*, *e.g.*, https://en.bitcoin.it/wiki/Protocol_documentation#Transaction_Verification; https://en.bitcoin.it/wiki/Elliptic_Curve_Digital_Signature_Algorithm; https://en.bitcoin.it/wiki/Secp256k1.

49. On information and belief, since January 23, 2024, Core Scientific has induced and/or contributed and continues to induce and/or contribute to the verification of digital signatures consistent with the Bitcoin protocol using ECDSA and secp256k1. For example, Core Scientific provides hosting services that include deploying and operating bitcoin miners for its customers. *See*, *e.g.*, Core Scientific 2025 10-K at 7 (describing "Our Digital Asset Hosted Mining operation segment" as providing "a full suite of services to our digital asset mining customers" including "deployment, monitoring, troubleshooting, optimization and maintenance of our customers' digital asset mining equipment …"), 25 ("We, and to our knowledge, our potential hosting customers, currently rely on these rewards to generate a significant portion of our total revenue."), 48, 57, 59-60, 65-66, 77, 81, 84 (stating that "we provide hosting services for large bitcoin mining customers"), 86, 90 ("The Company performs hosting services that enable customers to run blockchain and other high-performance computing operations."). "As of December 31, 2024, [Core Scientific] had deployed … approximately 7,100 hosted miners, which represented … 1.0 EH/s." *Id*. at 8, 49; *see also id*. at 9 (hosting services includes "installation" and "operation … of customer equipment"), 48 ("We own and host specialized computers ("miners") configured for the purpose of validating transactions on multiple digital asset network blockchains (referred to as, "mining"), predominantly the Bitcoin network."), 50 ("Our goal is to deploy a powerful fleet of self- and hosted-miners …").

50. On information and belief, since January 23, 2024, Core Scientific generated and continues to generate, digital signatures, including digital signatures consistent with the Bitcoin protocol using ECDSA and secp256k1, such as for generating bitcoin transactions. For example, on information and belief, Core Scientific sells and has sold bitcoin. Core Scientific 2025 10-K at 14 (referring to "digital assets we have sold and may sell in the future"), 26 ("[T]he significant

cash required by our expected HPC hosting growth initiatives will require us to sell the digital assets we earn periodically as cash needs and our treasury management policies dictate."), 33 (stating that "we utilize the services of third-party holders of digital assets and sell digital assets as soon as practicable"), 46 (showing $402,461,000 in "Proceeds from sales of digital assets" for the year ended December 31, 2024), 47 (under the heading "Our Business Model," stating that "We focus primarily on contracting our digital infrastructure for HPC hosting, and mining and selling bitcoin for cash, enhancing efficiencies in our operations (reducing our cost to mine)."), 61 ("For the year ended December 31, 2023, the carrying value of our digital assets sold was $400.8 million and the sales price was $404.7 million."), 67 ("We finance our operations primarily through cash generated from operations, including the sale of self-mined bitcoin …. Although our present needs will likely still result in sales of a significant portion of our self-mined bitcoin, we also may employ strategies intended to optimize cash received from self-mined bitcoin which may entail, subject to market conditions, holding bitcoin for future sale at any particular point in time."), 81 (describing $402,461,000 in "Proceeds from sale of digital assets generated by self-mining and shared hosting revenues" as "Proceeds from digital assets received as noncash revenue consideration liquidated nearly immediately after receipt as a routine operating activity."), 86 (showing $402,461,000 in "Proceeds from sales of digital assets and shared hosting" for the year ended December 31, 2024).

51. On information and belief, since January 23, 2024, Core Scientific used and continues to use, digital asset wallets for receiving and transferring (including selling) bitcoin. *See*, *e.g.*, Core Scientific 2025 10-K at 75 ("The primary procedures we performed to address this critical audit matter included the following: … Independently confirmed certain financial data

directly with the Company's third-party wallet custodian. … Compared the Company's digital wallet and custody records to publicly available blockchain records.").

52. Since January 23, 2024, Core Scientific has engaged and continues to engage in the foregoing infringing activities years after Certicom and BlackBerry invented and received patents covering the ECC technologies at issue in this action. Indeed, most of these innovations were already incorporated into the Bitcoin protocol and architecture by the time Core Scientific began mining Bitcoin.

53. On information and belief, the accused activities have been and are important parts of Core Scientific' business and its primary source of revenue since January 23, 2024. Core Scientific 2025 10-K at 5 ("Currently, the vast majority of our revenue is from mining bitcoin for our own account ('self-mining")."), 24 ("We currently generate almost all of our revenue from bitcoin rewards that we earn through self-mining in our facilities."), 26 ("To date, our revenue has primarily come from digital asset mining for our own account and digital asset mining hosting services."), 45, 56 ("Our revenue consists primarily of digital asset self-mining income, and fees from our digital asset hosting and HPC hosting operations."), 84 ("We derive the majority of our revenue from earning bitcoin for our own account ("self-mining.").

PATENTS IN SUIT

54. Malikie is the assignee of and owns all right and title to U.S. Patent Nos. 8,788,827 (the "'827 Patent"); 10,284,370 (the "'370 Patent"); 8,666,062 (the '062 Patent"); 7,372,960 (the "'960 patent"); and 8,532,286 (the "'286 Patent") (collectively, the "Asserted Patents").

55. The Asserted Patents, now owned by Malikie, were originally assigned to Certicom. Their inventors are former Certicom employees who spearheaded Certicom's industry-leading research and development in elliptic curve cryptography, applied cryptography and key

management, and other data security technologies. After a longstanding alliance between BlackBerry and Certicom that enabled BlackBerry to utilize Certicom's elliptic curve cryptography technology in its products, BlackBerry acquired Certicom in 2009.[109] Through its acquisition of Certicom and continued research and development in ECC, key management, and other aspects of data security, BlackBerry amassed "the world's largest ECC-based patent portfolio,"[110] which grew to include over 500 ECC patents[111].

56. Certicom and BlackBerry developed numerous innovative and diverse technologies, including groundbreaking inventions pertaining to generating and verifying digital signatures and related cryptographic and data security technology. Some of these groundbreaking inventions are described and claimed in certain of the Asserted Patents.

The "Accelerated Verification Patents" ('827, '370)

57. Plaintiffs incorporate by reference the preceding paragraphs of this Complaint.

58. The '827 Patent, entitled "Accelerated Verification of Digital Signatures and Public Keys," was duly and lawfully issued on July 22, 2014. A true and correct copy of the '827 Patent is attached hereto as Exhibit 1. The application for the '827 Patent was filed on September 14, 2012, and claims the benefit of priority to earlier related applications, including provisional application no. 60/644,034, filed on January 18, 2005.

59. The '827 Patent has been and continues to be in full force and effect since its issuance. Malikie owns by assignment the entire right and title in and to the '827 Patent, including the right to seek damages for any infringement thereof.

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[109] *See* https://www.certicom.com/content/certicom/en/about.html; https://www.certicom.com/content/certicom/en/about/news/release/2000/research-in-motion-and-certicom-to-enable-trusted-mobile-commerc.html.
[110] https://www.certicom.com/content/certicom/en/about.html.
[111] https://blackberry.certicom.com/en.

60. The ’370 Patent, entitled “Accelerated Verification of Digital Signatures and Public Keys,” was duly and lawfully issued on May 7, 2019. A true and correct copy of the ’370 Patent is attached hereto as Exhibit 2. The application for the ’370 Patent was filed on June 27, 2014 as a continuation of the ’827 Patent.

61. The ’370 Patent has been and continues to be in full force and effect since its issuance. Malikie owns by assignment the entire right and title in and to the ’370 Patent, including the right to seek damages for any infringement thereof.

62. The’827 Patent and ’370 Patent (the “Accelerated Verification Patents”) share the same title, specification, inventors, and a common priority claim.

63. The Accelerated Verification Patents relate to computational techniques used in cryptographic algorithms, including elliptic curve algorithms for generating and verifying digital signatures, that enable accelerated digital signature verification. *See*, *e.g.*, Ex. 1 at 1:12-13, 4:15-33, 9:32-37, 11:43-50, 12:47-59, 13:60-62, 14:40-42, 15:27-40.[112]

64. Cryptographic algorithms for generating and verifying digital signatures are used in cryptographic systems (or “cryptosystems”) to secure electronic data in computer systems and computer networks. *See*, *e.g.*, Ex. 1 at 1:18-48; *see also*, *e.g.*, 2:17-3:17, 6:23-36. The nature of electronic data in computer systems and computer networks presents unique security concerns relating to, for example, digital message authenticity, for which specialized digital signature techniques were found to be necessary. *See*, *e.g.*, Ex. 1 at 1:18-48; *see also*, *e.g.*, *id*. at 2:17-3:17; Whitfield Diffie and Martin Hellman, *New Directions in Cryptography* (1976)[113] at 645 (“Current

[112] Citations to the Accelerated Verification Patents (Exhibits 1 and 2) are exemplary and non-limiting. Because the Accelerated Verification Patents share a common specification, only the ’827 Patent (Exhibit 1) is cited in this Section. Citations to Exhibit 1 in this Section are intended to be representative of the Accelerated Verification Patents.

[113] https://ee.stanford.edu/~hellman/publications/24.pdf (“*New Directions in Cryptography*”).

electronic authentication techniques cannot meet this need."), 647 ("Unforgeable digital signatures and receipts are needed."), 649 ("Current electronic authentication systems cannot meet the need for a purely digital, unforgeable, message dependent signature. They provide protection against third party forgeries, but do not protect against disputes between transmitter and receiver."), 649 (observing that "we must discover a digital phenomenon" to provide authentication for a "purely electronic form of communication").

65. Digital signatures are generated using public key cryptography, *see*, *e.g.*, Ex. 1 at 1:18-48; *see also*, *e.g.*, *id*. at 2:17-3:17, which is a type of technology for securing electronic communications that was discovered after the advent of digital computing to address cryptography problems arising particularly in "computer controlled communication networks" that created "a need for new types of cryptographic systems."[114] *New Directions in Cryptography* at 644; *see also id*. ("Contemporary cryptography is unable to meet the requirements, in that its use would impose such severe inconveniences on the system users, as to eliminate many of the benefits of teleprocessing."); https://www.invent.org/inductees/whitfield-diffie ("In 1976, Whitfield Diffie, Martin Hellman, and Ralph Merkle developed public key cryptography (PKC), an innovative new method for securing electronic communications."); https://archive.nytimes.com/www.nytimes.com/library/cyber/week/122497encrypt.html ("The set of algorithms, equations and arcane mathematics that make up public key cryptography are a crucial technology for preserving computer privacy in and making commerce possible on the Internet. Some hail its discovery as one of the most important accomplishments of 20th-century mathematics …. Without it, there

[114] Some credit Whitfield Diffie, Martin Hellman, and Ralph Merkle with discovering public key cryptography, while others credit James Ellis, Clifford Cocks, and Malcom Williamson. Diffie, Hellman, and Merkle have received multiple patents for public key cryptography techniques, including U.S. Patent Nos. 4,200,770 and 4,218,582. Other public key cryptography techniques, like RSA, have also been patented. *See*, *e.g.*, U.S. Patent No. 4,405,829.

would be no privacy in cyberspace."); Whitfield Diffie, *The First Ten Years of Public Key Cryptography* (1988)[115] at 560 ("Public key cryptography was born in May 1975, the child of two problems," where "[t]he second problem … was the problem of signatures. Could a method be devised that would provide the recipient of a purely digital electronic message with a way of demonstrating to other people that it had come from a particular person…?"); *id*. at 560 ("This separation [of the capacities for encryption and decryption using public key cryptography] allows important improvements in the management of cryptographic keys and makes it possible to 'sign' a purely digital message."); https://bitcoinwiki.org/wiki/public-key-cryptography ("Public key algorithms are fundamental security ingredients in modern [ ] applications and protocols assuring the confidentiality[and] authenticity [ ] of electronic communications and data storage. They underpin various Internet standards …."); https://www.nsa.gov/History/Cryptologic-History/Historical-/Historical-Figures-View/Article/3006218/clifford-cocks-james-ellis-and-malcolm-williamson/ ("The security of the global communication infrastructure is built on public key cryptography and the importance of PKC in enabling the modern world of secure banking, e-commerce, and encrypted messaging cannot be overstated.").

66. As the patents explain, "Public key cryptography permits the secure communication over a data communication system without the necessity to transfer identical keys to other parties in the information exchange through independent mechanisms, such as a courier or the like." *See*, *e.g.*, Ex. 1 at 1:24-34. "Public key cryptography is based upon the generation of a key pair, one of which is private and the other public that are related by a one way mathematical function." *Id*. "The one way function is such that, in the underlying mathematical structure, the

[115] https://www.cs.virginia.edu/~evans/greatworks/diffie.pdf ("*The First Ten Years of Public Key Cryptography*").

public key is readily computed from the private key but the private key cannot feasibly be ascertained from the public key." *Id*. "Public key cryptography may also be used to digitally sign a message to authenticate the origin of the message." *Id*. at 1:44-48. "The author of the message signs the message using his private key and the authenticity of the message may then be verified using the corresponding public key." *Id*. So, in a network where members do not know each other (or wish to remain pseudonymous) and have never even communicated with each other previously, "[a] subscriber can sign a message by encrypting it with his own secret key. Anyone with access to the public key can verify that it must have been encrypted with the corresponding secret key, but this is of no help to him in creating (forging) a message with this property." *The First Ten Years of Public Key Cryptography* at 561. "The availability of a signature that the receiver of a message cannot forge and the sender cannot readily disavow makes it possible to trust the network with negotiations and transactions of much higher value than would otherwise be possible." *Id*. Accordingly, digital signature technology based on public key cryptography fundamentally enables "trustless" networks that do not require a trusted intermediary to verify or authenticate messages.

67. The patents further explain that "[t]he security of such systems [employing digital signatures using public key cryptography] is dependent to a large part on the underlying mathematical structure." *See*, *e.g.*, Ex. 1 at 1:49-55. "The most commonly used structure for implementing discrete logarithm systems is a cyclic subgroup of a multiplicative group of a finite field in which the group operation is multiplication or cyclic subgroups of elliptic curve groups in which the group operation is addition." *Id*.

68. "An elliptic curve E is a set of points of the form (x,y) where x and y are in a field F, such as the integers modulo a prime [number] p, commonly referred to as Fp, and x and y satisfy

a non-singular cubic equation, which can take the form $y^2=x^3+ax+b$ for some a and b in F." *Id*. at 1:56-2:16. Elliptic curves have other defining characteristics that give them special properties making them useful for cryptographic implementations. *See id*.

69. "In an elliptic curve cryptosystem," "[t]he key pair may be used with various cryptographic algorithms to establish common keys for encryption and to perform digital signatures." *Id*. at 2:17-27. "One such algorithm is the Elliptic Curve Digital Signature Algorithm (ECDSA) used to generate digital signatures on messages exchanged between entities. Entities using ECDSA have two roles, that of a signer and that of a verifier." *Id*. at 2:28-31. In ECDSA cryptosystems, "[the] signer selects a long term private key d, which ... must be secret." *Id*. at 2:31-41. The signer also computes "Q", which is "the long term public key of the signer, and is made available to the verifiers." *Id*. "Finding the private key d from the public key Q is believed to [be] an intractable problem for the choices of elliptic curves used today." *Id*. Accordingly, "[f]or any message M, the signer can create a signature, which is a pair of integers (r, s) in the case ECDSA," and "[a]ny verifier can take the message M, the public key Q, and the signature (r, s), and verify whether it was created by the corresponding signer." *Id*. at 2:42-48. This is because creation of a valid signature (r, s) is believed to possible only by an entity who knows the private key d corresponding to the public key Q." *Id*.

70. The process for creating a digital signature (signing an electronic message) using ECDSA includes, among others, the following steps. "First, the signer chooses some integer k … that is to be used as a session, or ephemeral, private key. The value k must be secret." *Id*. at 2:49-63. "Then, the signer computes a point R=kG that has coordinates (x, y)." *Id*. "Next, the signer converts x to an integer x' and then computes r=x' mod n, which is the first coordinate of the signature." *Id*. "The signer must also compute the integer e=h(M) mod n, where h is [a] hash

function." *Id*. "Finally, the second coordinate s is computed as s=(e+dr)/s mod n." *Id*. "The components (r, s) are used by the signer as the signature of the message, M, and sent with the message to the intended recipient." *Id*.

71. The process for verifying a digital signature created using ECDSA includes, among others, the following steps. "First the verifier computes an integer e=h(M) mod n from the received message." Ex. 1 at 2:64-3:4. "Then the verifier computes integers u and v such that u=e/s mod n and v=r/s mod n." *Id*. "Next, the verifier computes a value corresponding to the point R that is obtained by adding uG+vQ. This has co-ordinates (x, y)." *Id*. "Finally the verifier converts the field element x to an integer x' and checks that r=x' mod n. If it does the signature is verified." *Id*.

72. The inventors recognized technological problems associated with the above-described ECDSA signature verification process and invented ways to improve it. For example, the inventors recognized that "the verification of an ECDSA signature appears to take twice as long as the creation of an ECDSA signature, because the verification process involves two scalar multiplications, namely uG and vQ, whereas signing involves only one scalar multiplication, namely kG." Ex. 1 at 3:5-17. The inventors further recognized that "[e]lliptic curve scalar multiplications consume most of the time of these processes, so twice as many of them essentially doubles the computation time." *Id*. And, while some "[m]ethods are known for computing uG+vQ that takes less time than computing uG and v[Q] separately," the inventors recognized that such methods nevertheless "mean that computing uG+vQ can take 1.5 times as long as computing kG." *Id*.

73. Accelerating elliptic curve computations (reducing computing time) is a technological problem for which the inventors discovered technological solutions. Accelerating elliptic curve computations requires the use of additional computer resources, such as memory and

processing capabilities. *See* Ex. 1 at 3:18-4:14. However, known techniques for accelerating elliptic curve computations provided limited overall benefits to the overall computer architecture because the ability to achieve faster operations came at the significant cost of more memory and potentially wasteful pre-computation processing cycles. *Id*. The inventors recognized that "these costs may accumulate to the point that any benefit of faster computation is offset by the need to store or communicate" more pre-computed data. Moreover, "[t]he net benefit depends on the relative cost of time, memory and bandwidth, which can vary tremendously between implementations and systems." *Id*. Accordingly, achieving such benefits required case-by-case optimizations of parameters to strike a balance between an achievable increase in speed with increases in computational and memory costs. *See id*.

74. The inventors taught improvements to the ECDSA digital signature verification process. Ex. 1 at 4:15-33. For example, the patents teach techniques that enable accelerated signature verification, which include, among other things, generating, for use with a digital signature (*e.g.*, a signature with components (r, s)), an indicator (*e.g.*, i) to identify which value of a plurality of values (*e.g.*, for a point with coordinates (x, y)) recover able from the first signature component (*e.g.*, r of the pair (r, s)) is an ephemeral public key (*e.g.*, R). *See*, *e.g.*, Ex. 1 at 5:23-31, 6:37-7:38, 9:44-46, 10:61-11:5, 12:11-59, 15:29–33. The patents teach that such techniques accelerate the recovery of, for example, an ephemeral public key (*e.g.*, R) for verifying digital signatures (thereby also accelerating digital signature verification), which provide a technological improvement. *See*, *e.g.*, *id*.

75. The patents also teach techniques that enable accelerated signature verification, which include, among other things, recovering (or generating) a signer's public key (*e.g.*, Q) where doing so includes computing $Q=r^{-1}$ (sR-eG), where G comprises a generator of an elliptic curve

group that includes a first elliptic curve point R and the second elliptic curve point Q. *See*, *e.g.*, Ex. 1 at 4:48-5:4; 7:39-58, 8:12-9:31, 9:67-10:34, 12:43-59, 13:1-26, 15:15-40. The patents teach that such techniques accelerate the verification of digital signatures, allowing more digital signatures to be verified in a given amount of time, which provide a technological improvement over preexisting techniques. *See*, *e.g.*, *id*.

The "Finite Field Engine Patents" ('960 and '062)

76. Plaintiffs incorporate by reference the preceding paragraphs of this Complaint.

77. The '960 Patent, entitled "Method and Apparatus for Performing Finite Field Calculations," was duly and lawfully issued on May 13, 2008. A true and correct copy of the '960 Patent is attached hereto as Exhibit 3. The application for the '960 Patent was filed on January 29, 2002 and claims the benefit of priority to earlier related applications, including provisional application nos. 60/343,220, 60/343,223, and 60/343,226, and 60/343,227, all filed on December 31, 2001.

78. The '960 Patent was in full force and effect since its issuance. Malikie owns by assignment the entire right and title in and to the '960 Patent, including the right to seek damages for any infringement thereof.

79. The '062 Patent, entitled "Method and Apparatus for Performing Finite Field Calculations," was duly and lawfully issued on March 4, 2014. A true and correct copy of the '062 Patent is attached hereto as Exhibit 4. The application for the '062 Patent was filed on April 11, 2008 as a continuation of the '960 Patent.

80. The '062 Patent was in full force and effect since its issuance. Malikie owns by assignment the entire right and title in and to the '062 Patent, including the right to seek damages for any infringement thereof.

81. The ’960 Patent and ’062 Patent (the “Finite Field Engine Patents”) share the same title, specification, inventor, and common priority claim.

82. The Finite Field Engine Patents relate generally to finite field engines and methods for use with cryptographic systems. *See*, *e.g.*, Ex. 3 at 1:10–13.[116]

83. The patents teach that “[c]ryptography is commonly used to provide data security, integrity, and authentication” over communication channels, such as, for example, connections over the Internet or a wireless network. *See*, *e.g.*, *id*. at 1:16–39. Protocols employing such cryptographic technology may require the use of secret keys. *Id*. For example, “[c]orrespondents using public key cryptography each have a private key and a corresponding public key” such that “it is computationally infeasible to compute the private key given only the public key,” while “a mathematical relationship between the keys allows them to be used to provide security, integrity, or authentication in various protocols where the public keys are shared and the private keys are kept secret.” *Id*.

84. The patents teach that “[e]lliptic curve cryptography (ECC) is a particularly efficient form of public key cryptography that is especially useful in [resource] constrained environments.” *See*, *e.g.*, *id*. at 1:40–55.

85. As the patents explain, an elliptic curve is specified with “a finite field and an equation over that finite field are needed,” where “[t]he points on the elliptic curve are the pairs of finite field elements satisfying the equation of the curve.” *See*, *e.g.*, *id*. at 1:40–55. “To carry out calculations involving points on the elliptic curve, calculations are done in the underlying finite

[116] Citations to the Finite Field Engine Patents (Exhibits 3 and 4) are exemplary and non-limiting. Because the ’960 Patent and ’062 Patent share a common specification, only the ’960 Patent (Exhibit 3) is cited in this Section. Citations to Exhibit 3 in this Section are intended to be representative of the Finite Field Engine Patents.

field, according to well-known formulas that use parameters of the curve." *Id*. "These formulas define an addition operation on a pair of elliptic curve points," and "[a] scalar multiplication operation is defined by repeated additions, analogously to regular integer multiplication." *Id*.

86. Users of an elliptic curve cryptosystem generate a key pair comprising a private key and a public key based on parameters common to all uses (including the finite field, the elliptic curve, and a generator point on the curve). *Id*. at 1:56–65. A correspondent's private key is an integer (which is kept secret, such as a random number) that is less than the order of the elliptic curve. *Id*. "A correspondent's public key is the elliptic curve point obtained by scalar multiplication of the private key with a generator point." *Id*.

87. The patents teach that "[t]he security level of a cryptographic system mainly depends on the key size that is used," where "[l]arger key sizes give a higher security level than do smaller key sizes." *See*, *e.g.*, *id*. at 1:66–2:7. "[H]owever, different key sizes require defining different elliptic curves over different finite fields," where (generally) "the greater the desired cryptographic strength of the ECC, the larger will be the size of the finite field." *Id*. Multiple technological problems emerge from these possibilities.

88. For example, given the possible variability in elliptic curves and finite fields, "an implementation of elliptic curve cryptography may need to support several different finite fields for use in particular applications." *Id*. at 2:8–24. The patents teach that "[i]mplementing [such] an elliptic curve cryptosystem therefore requires either the implementation of specific methods for each finite field or a generic method usable in any finite field." *See*, *e.g.*, *id*. The patents further teach that "[t]he use of specific methods for each finite field leads to more efficient code since it may be optimized to take advantage of the specific finite field," but that "supporting several finite fields in this way will increase the code size dramatically." *See*, *e.g.*, *id*. On the other hand, "[t]he

use of a generic method prevents the use of optimization techniques, since the code cannot take advantage of any particular properties of the finite field," which "makes the code less efficient but has the advantage of much smaller code size." *Id*.

89. Another technological problem is that "[s]oftware implementation of finite fields raises the question of how to arrange the storage of the bits corresponding to the finite field elements." *Id*. at 2:25–30. The patents teach that elliptic curve cryptosystems may employ finite fields (whether binary fields or prime fields) with elements that may be represented as bits in hardware or software, where "[t]hese bits must then be represented in the memory storage of the computer system." *See*, *e.g.*, *id*. The patents teach, however, that "[w]hen using a general purpose computational engine (for example a typical CPU), finite field elements are often too long to be represented in a single machine word of the engine (engine word lengths are typically 16, 32, or 64 bit)." *See*, *e.g.*, *id*. And, "[s]ince the finite field [elements] used in ECC operations are typically 160 bits or more, these elements must be represented in several machine words." *Id*. "Engine routines (programs) that provide finite field calculations must therefore deal with multiple machine words to complete their calculations." *Id*. Moreover, "[w]ith either type of codes," *i.e.*, software employing specific methods (which may be word size-specific) or general methods (which may be word size non-specific), "it is necessary to provide finite field operations including multiplication, addition, inversion, squaring and modular reduction." *Id*. To compute the results of such operations on ECC finite field elements and store them in computer memory, complicated operations and "many bit shifts are required," which "results in longer processing time and also extra processor operation." *Id*.

90. The inventors recognized that improvements in finite field operations, including for ECC operations, may be achievable to improve the speed and efficiency of finite field engines. Ex. 3 at 4:10–27; *see id*. at 1:66–3:30.

91. For example, the patents teach techniques that enable the performance of finite field operations (*e.g.*, addition, subtraction, multiplication) on elements of a finite field (*e.g.*, coordinates of points on an elliptic curve) that include, among other things, representing each finite field element as a predetermined number of machine words, performing a non-reducing wordsized finite field operation on the representations and completing the operation for each word to obtain an unreduced result, performing a specific modular reduction of the unreduced result to reduce it to that of a field element, and using the reduced result in a cryptographic operation. *See*, *e.g.*, *id*. at 6:30–7:18, 7:19–9:7, 9:8–12:12, 15:13–16:42. Using such techniques, technological benefits are achievable. For example, "fast engines can be produced for many specific finite fields, without duplicating the bulk of the engine instructions (program)." *Id*., Abstract, 4:22–27; *see also*, *e.g.*, *id*. at 12:155–13:15, 15:12–21. Additionally, "finite field elements may be consistently stored in registers of the same word length." *Id*. at 8:46–60. Furthermore, fewer bit shifts are required, thereby resulting in shorter processing time and fewer processor operations. *Id*. at 11:14–19, 11:34–40; *see id*. at 3:26–30.

92. The patents also teach techniques that enable the performance of finite field operations (*e.g.*, addition, subtraction, multiplication) on elements of a finite field (*e.g.*, coordinates of points on an elliptic curve) that include, among other things, obtaining a first set of instructions for performing the finite field operation on values representing the elements of the finite field and executing it to generate an unreduced result, obtaining a second set of instructions for performing a modular reduction for a specific finite field and executing it to generate a reduced

result, and providing the reduced result as an output for use in a cryptographic operation. *See*, *e.g.*, *id*. at 6:30–7:18, 7:19–9:7, 9:8–12:12, 15:13–16:42. Using such techniques, technological benefits are achievable. For example, "fast engines can be produced for many specific finite fields, without duplicating the bulk of the engine instructions (program)." *Id*., Abstract, 4:22–27; *see also*, *e.g.*, *id*. at 12:155–13:15, 15:12–21. Additionally, "finite field elements may be consistently stored in registers of the same word length." *Id*. at 8:46–60. Furthermore, fewer bit shifts are required, thereby resulting in shorter processing time and fewer processor operations. *Id*. at 11:14–19, 11:34–40; *see id*. at 3:26–30.

The "Improved Modular Reduction" Patent ('286)

93. Plaintiffs incorporate by reference the preceding paragraphs of this Complaint.

94. The '286 Patent, entitled "System and Method for Reducing the Computation and Storage Requirements for a Montgomery-Style Reduction," was duly and lawfully issued on September 10, 2013. A true and correct copy of the '286 Patent is attached hereto as Exhibit 5. The application for the '286 Patent was filed on July 19, 2010, and claims the benefit of priority of Provisional App. No. 61/226,427, filed on July 17, 2009.

95. The '286 Patent has been and continues to be in full force and effect since its issuance. Malikie owns by assignment the entire right and title in and to the '268 Patent, including the right to seek damages for any infringement thereof.

96. The Improved Modular Reduction Patent (the '286 Patent) relates generally to systems and methods for reducing the computation and storage requirements for a Montgomery style reduction (a form of modular arithmetic). *See*, *e.g.*, Ex. 5 at 1:13–16; *see also id*., Abstract.

97. The patent teaches that "[i]n cryptography, e.g. public key cryptography, operations such as multiplication or exponentiation of integers in some group Z_n, may be required, where

modular arithmetic is used to operate on the integers." Ex. 5 at 1:20–30. "For example, to multiply two numbers modulo some [number] n, the classical approach is to first perform the multiplication and then calculate the remainder."[117] *Id.* The patent teaches that "[a]lthough the classical approach is simple for basic operations such as in multi-precision calculations and does not require precomputation, the step of calculating the remainder is considered slow." *Id.* "The calculation of the remainder is referred to as reduction in modular arithmetic." *Id.*

98. The patent further teaches that "[i]n Montgomery reduction, calculations with respect to a modulus n are carried out with the aid of an auxiliary number R called the Montgomery radix or base." Ex. 5 at 1:47–64. For example, "[t]he Montgomery reduction of a number a with radix R and prime modulus n is the quantity given by $aR^{-1} \bmod n$." *Id.*

99. "In a given cryptographic system," the patent teaches, "a computational engine may be used for calculating the Montgomery product of two numbers, this engine being sometimes referred to as a Montgomery engine or Montgomery machine." Ex. 5 at 1:65–2:13. The patent further teaches that "[t]he engine may be implemented in a hardware or software module and operates on a set of parameters to produce a result." *Id.* For example, using a Montgomery engine, "Montgomery multiplication may proceed as follows:

1. $c \leftarrow 0$, where c will hold the result $abR^{-1} \bmod n$ and $c = (c_k c_{k-1} \dots c_1 c_0)$.

2. For i from 0 to (k-1) do the following:
2.1 $m \leftarrow (c_0 + a_i, b_o)\mu \bmod 2^w$; and
2.2 $c \leftarrow (c + a_i b + mn)/2^w$

3. If $c \geqq n$ then $c \leftarrow c - n$

[117] The term "modulo" means to calculate the remainder after dividing one number by another. *See, e.g.*, https://www.mathsisfun.com/definitions/modulo-operation.html; *see also* https://en.wikipedia.org/wiki/Modulo ("In computing and mathematics, the modulo operation returns the remainder or signed remainder of a division, after one number is divided by another, the latter being called the modulus of the operation."

4. Return (c).”

Ex. 5 at 2:14–33.

100. “In Montgomery reduction, the value μ is used to zero w least significant bits of a value a,” whereby “[f]irst, a multiplier m=μa mod 2^w is computed,” where “[t]he value m has at most w bits.” Ex. 5 at 2:47–53. “Adding a+mn will zero w least significant bits of a, and a may be shifted down w bits.” *Id*. “Since typically L=kw, where k is the number of w-bit words in R[,] this operation is repeated k times to effect the Montgomery reduction aR^{-1} mod n.” *Id*.

101. The patent teaches that “efficiency may be increased by pre-computing certain fixed values to be used in the calculations,” where “[s]uch values include $\mu=(-n)^{-1}$ mod 2^w, for some w typically being the bit size of a word (or block) of the value (or perhaps the entire value) being operated on; and R^2 mod n.” Ex. 5 at 2:34–46.

102. The patent further teaches that “[i]n a register-based processor, registers are typically used to hold components of the value to be reduced, namely the precomputed value μ and the modulus n.” Ex. 5 at 2:59–61.

103. The inventors recognized these technological problems and discovered improvements in modular reduction engines for computers (*e.g.*, Montgomery engines) to address them. *See*, *e.g.*, Ex. 5 at 3:21–45, 5:28–36, 3:40–45, 5:24–35, 5:45–6:19, 6:51–65.

104. For example, the patent teaches techniques for performing, on a cryptographic apparatus, a Montgomery-style reduction in a cryptographic operation that includes obtaining an operand for the cryptographic operation; computing a modified operand using a reduction value, instead of a modulus used in performing a standard Montgomery reduction, to perform a replacement of a least significant word of the operand, rather than per form a cancellation thereof, where the reduction value is a function of the modulus; and outputting the modified operand. *See*,

e.g., Ex. 5 at 4:40–6:65. The patent teaches that such inventive techniques can reduce the number of multiplications and registers needed to effect the modular reduction, thereby providing a new and inventive technique for efficient modular reduction machines.[118] *See*, *e.g.*, *id*. at 3:40–42, 5:28–36, 6:2–19, 6:51–65. For example, the patent teaches that "[i]n a machine 22 that has a limited number of registers and/or computational capabilities, it is desirable to reduce both the number of stored values and the number of computations," and that "[t]o avoid having to store both μ and n, it has been recognized by the inventor that a modified reduction value or a logical shift or signed version of such a value can be used in place of μ and n for the bulk of the low-order reduction." *Id*. at 5:28–36. The patent also teaches that the inventive technique "avoids both the multiplication necessary to compute m and the storage required for μ" and that the modified reduction value "does not require more registers than would be needed" otherwise. *Id*. at 6:2–19. The patent further teaches that the inventors observed significant benefits of the inventive techniques when used, for example, to perform ECC operations using resource-constrained computer processor architectures (e.g., "the popular ARM architecture"). *Id*. at 6:51–65.

* * *

105. Malikie made multiple attempts to contact Core Scientific regarding Malikie's patent portfolio and to engage in licensing discussions. Malikie sent a first letter to Core Scientific on March 28, 2025, which identified exemplary patents (including several of the Asserted Patents) and the Core Scientific services that infringe them. Malikie conveyed its intent to offer a license

[118] A register is hardware in a CPU for temporary storage of data during program execution. *See*, *e.g.*, https://techterms.com/definition/register#google_vignette; https://www.allaboutcircuits.com/video-lectures/internal-registers-alu/; https://gunkies.org/wiki/Register; https://www.theiotacademy.co/blog/registers-in-cpu/.

to Core Scientific and its desire to begin patent licensing discussions. Core Scientific did not respond to that letter.

106. Malikie sent a second letter on April 18, 2025, which identified additional patents (including the remaining Asserted Patents) and corresponding infringing Core Scientific services. Malikie reiterated its intent to offer Core Scientific a license and its desire to schedule a meeting to discuss the issue further. Core Scientific responded to Malikie's second letter with an email stating that Core Scientific filed for bankruptcy in December 2022 and emerged from bankruptcy in January 2024. Core Scientific's email asserted that Malikie's letters and "apparent" actions "are violative of the protections afforded Core Scientific pursuant to the Bankruptcy Court and are in violation of the Order of the Bankruptcy Court in those Chapter 11 Cases." Core Scientific's email further threatened that "You can send me a letter that you have moved on or we will bring a proceeding holding you and your firm in contempt at a time and place of our choosing. Act accordingly." Core Scientific's letter did not address its infringing activities following its emergence from bankruptcy. Nor did it explain why Core Scientific apparently believes the "protections afforded [to it] pursuant to the Bankruptcy Court" exempts or excuses its unauthorized use of Malikie's intellectual property after January 23, 2024.

107. Given Core Scientific's refusal to participate in licensing discussions, Plaintiffs have no recourse but to file this action to seek just compensation for Core Scientific's unauthorized use of Malikie's patents. Plaintiffs seek monetary damages for patent infringement claims not discharged by or as a result of Core Scientific's bankruptcy proceedings.

JURISDICTION AND VENUE

108. Plaintiffs incorporate by reference the preceding paragraphs of this Complaint.

109. This civil action arises under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*, including without limitation 35 U.S.C. §§ 271, 281, 283, 284, and 285. This is a patent infringement lawsuit over which this Court has subject matter jurisdiction under, *inter alia*, 28 U.S.C. §§ 1331, 1332, and 1338(a).

110. This District has general and specific personal jurisdiction over Defendant because, directly or through intermediaries, Defendant has committed acts within this District giving rise to this action; is present in and transacts and conducts business, directly, and/or indirectly, in this District and the State of Texas; and transacts and conducts business with residents of this District and the State of Texas.

111. Plaintiffs' causes of action arise, at least in part, from Defendant's contacts with and activities in and/or directed at this District and the State of Texas. For example, Core Scientific owns, leases, and/or operates bitcoin mining facilities in this Judicial District, including in Denton, Texas.[119] Core Scientific contracts with the City of Denton for land, access to power, and other rights for Core Scientific's bitcoin mining operations there.[120] Core Scientific also owns, leases, and/or operates bitcoin mining facilities in Pecos, Texas, and data center facilities in Austin, Texas.[121]

112. Core Scientific is also a member of the Texas Blockchain Council, an "industry association working to make the State of Texas the jurisdiction of choice for bitcoin, blockchain, and digital asset innovation."[122] According to the Texas Blockchain Council, it "promote[s]

[119] *See* https://corescientific.com/infrastructure-footprint/?location=texas_denton#infrastructure-footprint; Core Scientific 2025 10-K at 8, 95, 104, 137.
[120] Core Scientific 2025 10-K at 95, 104, 137.
[121] *See* https://corescientific.com/infrastructure-footprint/?location=texas_denton#infrastructure-footprint; Core Scientific 2025 10-K at 8, 45, 57.
[122] https://texasblockchaincouncil.org/about; https://texasblockchaincouncil.org/membership (identifying Core Scientific as an Executive Partner)

blockchain technology initiatives such as bitcoin mining that drive growth and benefit the citizens of Texas" and "exist[s] to amalgamate the influence of our members, to advocate for blockchain-centric public policy initiatives and to educate members of government about the benefits of blockchain technology."[123] The Texas Blockchain Council works to influence the state of the law in Texas as it relates to bitcoin, blockchain, and digital assets.[124]

113. Core Scientific has infringed the Asserted Patents within this District and the State of Texas by making, using, selling, offering for sale, and/or importing or by having made, used, sold, offered for sale, and/or imported in or into this District and elsewhere in the State of Texas, products and services covered by claims in the Asserted Patents, including without limitation products that, when made or used, practice the claimed methods of the Asserted Patents. Core Scientific, directly and through intermediaries, has and continues to make, use, sell, offer for sale, import, ship, distribute, advertise, promote, and/or otherwise commercialize such infringing products and services in or into this District and the State of Texas. Core Scientific regularly conducts and solicits business in, engages in other persistent courses of conduct in, and/or derives substantial revenue from goods and services provided to residents of this District and the State of Texas.

[123] https://texasblockchaincouncil.org/.

[124] *See*, *e.g.*, https://texasblockchaincouncil.org/policy-page ("The Texas Blockchain Council is a proud member of the Texas Innovation and Technology Caucus. Our members are actively working to provide subject matter expertise to this group of forward-thinking legislators with a focus on the following policy initiatives."); https://www.itcaucus.com/ ("Members of the Texas House of Representatives and Texas Senate formed the bipartisan Innovation and Technology Caucus of the Texas Legislature (IT Caucus) as a policy shop and industry partner to focus on educating and informing members on ways to further advance technology industry innovation, growth, and competitiveness here in Texas, and strengthening the already significant impact this sector has on the state's economy.").

114. This Court has personal jurisdiction over Core Scientific pursuant to TEX. CIV. PRAC. & REM. CODE § 17.041 *et seq*.

115. Venue is proper in this District under 28 U.S.C. §§ 1391(b)-(c) and 1400(b).

116. Core Scientific is doing business, either directly or through respective agents, on an ongoing basis in this Judicial District and elsewhere in the United States, and has committed and continues to commit acts of infringement in this district. Core Scientific has a regular and established places of business in this Judicial District, including Denton, Texas, where Core Scientific owns, leases, and/or operates bitcoin mining facilities. On information and belief, Core Scientific has and continues to make, use, sell, offer to sell, and/or import infringing products and services into and/or within this District, maintains a permanent and/or continuing presence within this District, and has the requisite minimum contacts with this District such that this venue is a fair and reasonable one. Upon information and belief, Core Scientific has transacted and, at the time of the filing of the Complaint, is continuing to transact business within this District.

FIRST CLAIM

(Infringement of the '827 Patent)

117. Plaintiffs incorporate by reference the preceding paragraphs of this Complaint.

118. The '827 Patent is generally directed to improved techniques for use in cryptographic algorithms, and, in particular, to methods and apparatuses for generating a public key of the signer of a digital signature by computing $Q=r^{-1}$ (sR-eG), where G comprises a generator of an elliptic curve group that includes a first elliptic curve point R and a second elliptic curve point Q.

119. Defendant has been on notice of the '827 Patent and a specific factual basis for its infringement of the '827 Patent since at least March 28, 2025. On information and belief, Defendant did not take any action to stop its infringement.

120. For Plaintiffs' claims not discharged by or as a result of any bankruptcy proceedings involving Defendant, Defendant has, under 35 U.S.C. § 271(a), directly infringed, and continues to directly infringe, literally and/or under the doctrine of equivalents, one or more claims, including without limitation at least claim 1 of the '827 Patent, by making, using, testing, selling, offering for sale, and/or importing hardware and/or software including devices and software that comply with the Bitcoin protocol (excluding any products licensed under the '827 Patent), such as bitcoin mining equipment (including, for example, hardware and software for digital asset mining, including mining rigs, application-specific integrated circuits (ASICs), computers, nodes, miners, and software applications) and wallets (including hardware and software that functions as a bitcoin wallet). An exemplary claim chart showing one way in which Core Scientific infringes claim 1 of the '827 Patent is attached as Exhibit 6.

121. For Plaintiffs' claims not discharged by or as a result of any bankruptcy proceedings involving Defendant, Defendant has also indirectly infringed, and continues to indirectly infringe, the '827 Patent under 35 U.S.C. § 271(b) and (c).

122. Defendant has knowingly, intentionally actively aided, abetted, and induced others to directly infringe at least claim 1 of the '827 Patent, and continues to do so, by, for example, deploying and operating bitcoin mining machines for its customers. *See* Exhibit 6.

123. Defendant has also contributed to the direct infringement of at least claim 1 of the '827 Patent, and continues to do so, by, for example, supplying, with knowledge of the '827 Patent, a material part of a claimed invention, where the material part is not a staple article of commerce

and is incapable of substantial noninfringing use. For example, Defendant provides, owns, operates, sells, offers to sell, and/or imports bitcoin mining machines that are not a staple article of commerce and are incapable of substantial noninfringing use. *See* Exhibit 6.

124. Defendant's infringement has been willful in view of the above and its failure to take any action, even after being put on notice, to stop its infringement.

SECOND CLAIM

(Infringement of the '370 Patent)

125. Plaintiffs incorporate by reference the preceding paragraphs of this Complaint.

126. The '370 Patent is generally directed to improved techniques for use in cryptographic algorithms, and, in particular, to methods and apparatuses for verifying a digital signature included with a message using a public key omitted from the message but recovered by computing $Q=r^{-1}$ (sR-eG), where G comprises a generator of an elliptic curve group that includes the elliptic curve point R and the elliptic curve point Q, and wherein e is a hash value computed from the electronic message M.

127. Defendant has been on notice of the '370 Patent and a specific factual basis for its infringement of the '370 Patent since at least March 28, 2025. On information and belief, Defendant did not take any action to stop its infringement.

128. For Plaintiffs' claims not discharged by or as a result of any bankruptcy proceedings involving Defendant, Defendant has, under 35 U.S.C. § 271(a), directly infringed, and continues to directly infringe, literally and/or under the doctrine of equivalents, one or more claims, including without limitation at least claim 1 of the '370 Patent, by making, using, testing, selling, offering for sale, and/or importing hardware and/or software including devices and software that comply with the Bitcoin protocol (excluding any products licensed under the '370 Patent), such as bitcoin

mining equipment (including, for example, hardware and software for digital asset mining, including mining rigs, application-specific integrated circuits (ASICs), computers, nodes, miners, and software applications) and wallets (including hardware and software that functions as a bitcoin wallet). An exemplary claim chart concerning one way in which Core Scientific infringes claim 1 of the '370 Patent is attached as Exhibit 7.

129. For Plaintiffs' claims not discharged by or as a result of any bankruptcy proceedings involving Defendant, Defendant has also indirectly infringed, and continues to indirectly infringe, the '370 Patent under 35 U.S.C. § 271(b) and (c).

130. Defendant has knowingly, intentionally actively aided, abetted, and induced others to directly infringe at least claim 1 of the '370 Patent, and continues to do so, by, for example, deploying and operating bitcoin mining machines for its customers. *See* Exhibit 7.

131. Defendant has also contributed to the direct infringement of at least claim 1 of the '370 Patent, and continues to do so, by, for example, supplying, with knowledge of the '370 Patent, a material part of a claimed invention, where the material part is not a staple article of commerce and is incapable of substantial noninfringing use. For example, Defendant provides, owns, operates, sells, offers to sell, and/or imports bitcoin mining machines that are not a staple article of commerce and are incapable of substantial noninfringing use. *See* Exhibit 7.

132. Defendant's infringement has been willful in view of the above and its failure to take any action, even after being put on notice, to stop its infringement.

THIRD CLAIM

(Infringement of the '960 Patent)

133. Plaintiffs incorporate by reference the preceding paragraphs of this Complaint.

134. The ’960 Patent is generally directed to finite field engines and methods for use with cryptographic systems, and, in particular, techniques that enable the performance of finite field operations on elements of a finite that include, among other things, representing each finite field element as a predetermined number of machine words, performing a non-reducing wordsized finite field operation on the representations and completing the operation for each word to obtain an unreduced result, performing a specific modular reduction of the unreduced result to reduce it to that of a field element, and using the reduced result in a cryptographic operation.

135. Defendant has been on notice of the ’960 Patent and a specific factual basis for its infringement of the ’960 Patent since at least March 28, 2025.

136. For Plaintiffs’ claims not discharged by or as a result of any bankruptcy proceedings involving Defendant, Defendant has, under 35 U.S.C. § 271(a), directly infringed, literally and/or under the doctrine of equivalents, one or more claims, including without limitation at least claim 3 of the ’960 Patent, by having made, used, tested, sold, offered for sale, and/or imported hardware and/or software including devices and software that complied with the Bitcoin protocol (excluding any products licensed under the ’960 Patent), such as bitcoin mining equipment (including, for example, hardware and software for digital asset mining, including mining rigs, application-specific integrated circuits (ASICs), computers, nodes, miners, and software applications) and wallets (including hardware and software that functions as a bitcoin wallet). An exemplary claim chart showing one way in which Core Scientific infringed claim 3 of the ’960 Patent is attached as Exhibit 8.

FOURTH CLAIM

(Infringement of the ’062 Patent)

137. Plaintiffs incorporate by reference the preceding paragraphs of this Complaint.

138. The ’062 Patent is generally directed to finite field engines and methods for use with cryptographic systems, and, in particular, techniques that enable the performance of finite field operations on elements of a finite field that include, among other things, obtaining a first set of instructions for performing the finite field operation on values representing the elements of the finite field and executing it to generate an unreduced result, obtaining a second set of instructions for performing a modular reduction for a specific finite field and executing it to generate a reduced result, and providing the reduced result as an output for use in a cryptographic operation.

139. Defendant has been on notice of the ’062 Patent and a specific factual basis for its infringement of the ’062 Patent since at least March 28, 2025.

140. For Plaintiffs’ claims not discharged by or as a result of any bankruptcy proceedings involving Defendant, Defendant has, under 35 U.S.C. § 271(a), directly infringed, literally and/or under the doctrine of equivalents, one or more claims, including without limitation at least claim 3 of the ’960 Patent, by having made, used, tested, sold, offered for sale, and/or imported hardware and/or software including devices and software that complied with the Bitcoin protocol (excluding any products licensed under the ’062 Patent), such as bitcoin mining equipment (including, for example, hardware and software for digital asset mining, including mining rigs, application-specific integrated circuits (ASICs), computers, nodes, miners, and software applications) and wallets (including hardware and software that functions as a bitcoin wallet). An exemplary claim chart showing one way in which Core Scientific infringed claim 1 of the ’062 Patent is attached as Exhibit 9.

FIFTH CLAIM

(Infringement of the ’286 Patent)

141. Plaintiffs incorporate by reference the preceding paragraphs of this Complaint.

142. The ’286 Patent is generally directed to systems and methods for reducing the computation and storage requirements for a Montgomery style reduction and, in particular, to techniques for performing, on a cryptographic apparatus, a Montgomery-style reduction in a cryptographic operation that includes obtaining an operand for the cryptographic operation; computing a modified operand using a reduction value, instead of a modulus used in performing a standard Montgomery reduction, to perform a replacement of a least significant word of the operand, rather than per form a cancellation thereof, where the reduction value is a function of the modulus; and outputting the modified operand.

143. Defendant has been on notice of the ’286 Patent since at least March 28, 2025, and a specific factual basis for its infringement of the ’286 Patent since at least April 18, 2025. On information and belief, Defendant did not take any action to stop its infringement.

144. For Plaintiffs’ claims not discharged by or as a result of any bankruptcy proceedings involving Defendant, Defendant has, under 35 U.S.C. § 271(a), directly infringed, and continues to directly infringe, literally and/or under the doctrine of equivalents, one or more claims, including without limitation at least claim 1 of the ’286 Patent, by making, using, testing, selling, offering for sale, and/or importing hardware and/or software including devices and software that comply with the Bitcoin protocol (excluding any products licensed under the ’286 Patent), such as bitcoin mining equipment (including, for example, hardware and software for digital asset mining, including mining rigs, application-specific integrated circuits (ASICs), computers, nodes, miners, and software applications) and wallets (including hardware and software that functions as a bitcoin wallet). An exemplary claim chart showing one way in which Core Scientific infringes claim 1 of the ’286 Patent is attached as Exhibit 10.

145. For Plaintiffs' claims not discharged by or as a result of any bankruptcy proceedings involving Defendant, Defendant has also indirectly infringed, and continues to indirectly infringe, the '286 Patent under 35 U.S.C. § 271(b) and (c).

146. Defendant has knowingly, intentionally actively aided, abetted, and induced others to directly infringe at least claim 1 of the '286 Patent, and continues to do so, by, for example, deploying and operating bitcoin mining machines for its customers. *See* Exhibit 10.

147. Defendant has also contributed to the direct infringement of at least claim 1 of the '286 Patent, and continues to do so, by, for example, supplying, with knowledge of the '286 Patent, a material part of a claimed invention, where the material part is not a staple article of commerce and is incapable of substantial noninfringing use. For example, Defendant provides, owns, operates, sells, offers to sell, and/or imports bitcoin mining machines that are not a staple article of commerce and are incapable of substantial noninfringing use. *See* Exhibit 10.

148. Defendant's infringement has been willful in view of the above and its failure to take any action, even after being put on notice, to stop its infringement.

PRAYER FOR RELIEF

WHEREFORE, Plaintiffs pray for judgment against Core Scientific as follows:

149. That, for Plaintiffs' claims not discharged by or as a result of any bankruptcy proceedings involving Core Scientific, Core Scientific has infringed each of the Asserted Patents and will continue to infringe the'827 Patent, '370 Patent, and '286 Patent;

A. That Core Scientific's infringement of the'827 Patent, '370 Patent, and '286 Patent have been willful;

B. That, for Plaintiffs' claims not discharged by or as a result of any bankruptcy proceedings involving Core Scientific, Core Scientific pay Plaintiffs damages adequate to

compensate for its past infringement of each of the Asserted Patents, and present and future infringement of the'827 Patent,'370 Patent, and '286 Patent, together with interest and costs under 35 U.S.C. § 284;

C. That Core Scientific pay prejudgment and post-judgment interest on the damages assessed;

D. That Core Scientific pay Plaintiffs enhanced damages pursuant to 35 U.S.C. § 284;

E. That Core Scientific be ordered to pay ongoing royalties to Plaintiffs for any post-judgment infringement of the'827 Patent,'370 Patent, and '286 Patent;

F. That this is an exceptional case under 35 U.S.C. § 285; and that Core Scientific pay Malikie and KPI's attorneys' fees and costs in this action; and

G. That Plaintiffs be awarded such other and further relief, including equitable relief, as this Court deems just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Federal Rule of Civil Procedure 38(b), Plaintiffs hereby demands a trial by jury on all issues triable to a jury.

Date: May 12, 2025

Respectfully submitted,

/s/ Philip J. Eklem by permission Claire Abernathy Henry

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